

# Table of Contents

	Page
• Research Summary.....	7
• TITLE: Invert emulsifiers for oil-base drilling muds.....	8
• TITLE: Stabilizing emulsions using silane.....	9
• TITLE: Surfactant composition for invert emulsified drilling muds .....	10
• TITLE: Drilling mud containing natural triglyceride ester oil and diluent.....	11
• TITLE: Purified paraffins as lubricants, rate of penetration enhancers, and spotting fluid additives for water-based drilling fluids.....	12
• TITLE: Drilling fluid composition containing a water-soluble glycol ether.....	13
• TITLE: The significance of formation damage caused by the adsorption oil-based mud surfactant .....	14
• TITLE: Drilling fluids containing fish oil.....	14
• TITLE: Non-hydrocarbon invert emulsions for use in well drilling operations .....	15
• TITLE: Drilling fluids based on polymer complexes.....	16
• TITLE: Polyamine sensitization in offshore workers handling drilling muds .....	16
• TITLE: The use of polyalphaolefin in downhole drilling.....	17
• TITLE: Fluid-loss control additive for inverse-emulsion drilling fluids and method of preparation.....	18
• TITLE: Drilling fluids based on hydrocarbon soluble polyampholytes.....	19
• TITLE: Drilling fluids.....	20
• TITLE: Oil-based drilling fluids containing amido amine-organophilic clay gellants and additives.....	21
• TITLE: Thickeners for aqueous media.....	22
• TITLE: Low and high temperature drilling fluids based on sulfonated terpolymer ionomers.....	23
• TITLE: Fast drilling invert emulsion drilling fluids .....	24
• TITLE: Prevention of drilling-fluid loss in subterranean formations.....	25
• TITLE: Drilling mud viscosification agents based on sulfonated ionomers.....	26
• TITLE: Additive composition for release of a stuck drill pipe .....	27
• TITLE: Emulsifying additive for oil base drilling fluids .....	28
• TITLE: Invert emulsions for well-drilling comprising a polydiorganosiloxane.....	29
• TITLE: An oil-based drilling mud.....	30
• TITLE: Inverflo - an emulsifier for invert emulsion mud for high temperature deep wells.....	30
• TITLE: Emulsifier for use with an oil-based drilling mud.....	31
• TITLE: Oil well fluids and dispersants.....	32
• TITLE: Spacer fluid for spacing drilling muds and cement.....	33
• TITLE: Drilling fluids containing lignin derivatives .....	34
• TITLE: Oil-base drilling fluid composition .....	35

3

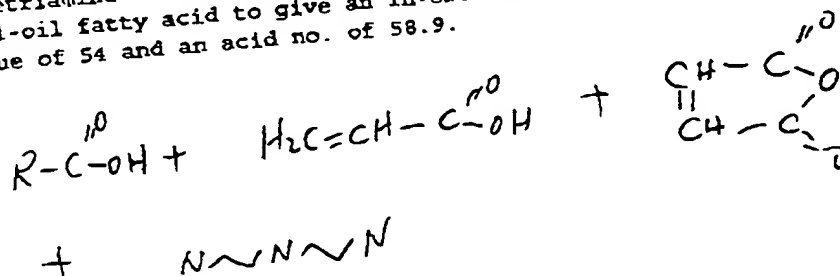
• TITLE: What's new in mud engineering? II. Major developments in oil muds, corrosion control and completion fluids have combined to help solve complex deep drilling problems.....	36
• TITLE: Drilling mud emulsifier and inverse emulsion prepared with the emulsifier.....	37
• TITLE: The use of selected ester oils in drilling muds, especially for off-shore production of petroleum and natural gas .....	38
• TITLE: Emulsifying composition and inverse water-in-oil emulsions containing it as fluids for drilling and well treatment .....	39
• TITLE: Filtration control additives for emulsion drilling muds, their manufacture, their use in drilling muds, and method for drilling wells using these muds.....	40
• TITLE: Method and apparatus for manufacture of oil-based drilling muds.....	41
• TITLE: Polymers for clay-based drilling fluid emulsions .....	42
• TITLE: Metal compound of acid group-containing condensation products of ketones and aldehydes.....	43
• TITLE: Drilling fluid in the form of a water-in-oil emulsion.....	44
• TITLE: Emulsifiers containing reaction products of at least one basic compound with a wood tar, wood tar mixture or wood tar fraction.....	45
• TITLE: A SOLID EMULSIFIER USED TO IMPROVE THE PERFORMANCE OF OIL-IN-WATER DRILLING FLUIDS.....	46
• TITLE: (R) EMULSIFYING AGENT, REVERSE EMULSIONS PRODUCED USING THIS EMULSIFYING AGENT AND USE OF THESE EMULSIONS IN DRILLING WELLS.....	46
• TITLE: USE OF SURFACE-ACTIVE CARBOXYLIC ACID COMPLEX ESTERS AS EMULSIFIERS IN OIL-BASED DRILLING MUDS AND OTHER BOREHOLE TREATMENT AGENTS .....	47
• TITLE: (R) EMULSIFIERS FOR OIL BASED DRILLING FLUIDS .....	48
• TITLE: EMULSIFIERS FOR OIL BASED DRILLING FLUIDS .....	48
• TITLE: (R) EMULSIFYING AGENT FOR OIL BASED DRILLING FLUIDS.....	48
• TITLE: ZWITERIONIC 2-ALKYL IMIDAZOLINES AS EMULSIFYING AGENTS FOR OIL BASED DRILLING FLUIDS .....	49
• TITLE: EMULSIFIER AND INVERT EMULSION DRILLING FLUIDS CONTAINING IT .....	49
• TITLE: NEW EMULSIFIERS ARE FINDING USE IN OIL-BASED MUDS.....	50
• TITLE: SILICONE EMULSIFIER COMPOSITION, INVERT EMULSIONS THEREFROM AND METHOD THEREFOR .....	50
• TITLE: (R) AN ANALYTICAL METHOD FOR EMULSIFIER CONCENTRATION IN AN OIL-BASE DRILLING FLUID .....	51
• TITLE: EMULSIFIER COMPOSITIONS AND EMULSIONS CONTAINING THE SAME .....	51
• TITLE: EMULSIFIER FOR EMULSIONS OF OIL-IN-WATER TYPE WITH APPLICATION FOR DRILLING SCOPE.....	51
• TITLE: EMULSIFIER FOR EMULSIONS OF THE WATER-IN-OIL TYPE FOR GREAT DEPTH DRILLING .....	51
• TITLE: (R) ESTERS OF CARBOXYLIC ACIDS OF MEDIUM CHAIN-LENGTH AS A COMPONENT OF THE OIL PHASE IN INVERT DRILLING MUDS.....	52
• TITLE: (R) INVERT EMULSION DRILLING MUD.....	52

□ TITLE: Invert emulsifiers for oil-base drilling muds

LS ANSWER 1 OF 1 CA COPYRIGHT 1999 ACS  
 ACCESSION NUMBER: 106:216803 CA  
 INVENTOR(S): Schilling, Peter  
 PATENT ASSIGNEE(S): Westvaco Corp. , USA  
 SOURCE: U.S.. 9 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4658036	A	19870414	US 85-783692	19851003

AB A process for prepn. of invert emulsifiers useful for oil-based drilling muds comprises (a) reacting .gtoreq.1 tall-oil fatty acids with acrylic acid, maleic anhydride, or fumaric acid, and (b) reacting the product from (a) with diethylenetriamine and .gtoreq.1 tall-oil fatty acids to give the invert emulsifiers. Thus, 250 g Westvaco Diacid 1525 (a reaction product of acrylic acid with a tall-oil fatty acid mixt. consisting essentially of conjugated linoleic acid and oleic acid) was reacted with 30 g diethylenetriamine at 220.degree.. cooled to 180.degree., and reacted with 160 g tall-oil fatty acid to give an invert emulsifier having an amine value of 54 and an acid no. of 58.9.



☐ TITLE: Stabilizing emulsions using silane

(Silane)  
Densehouse fire risk

L7 ANSWER 8 OF 41 CA COPYRIGHT 1999 ACS  
ACCESSION NUMBER: 124:347873 CA  
INVENTOR(S): Smith, Philip Stephen; Hibbert, Julie Ann  
PATENT ASSIGNEE(S): Sofitech N.V., Belg.; Compagnie Des Services Dowell  
Schlumberger S.A.; Schlumberger Canada Limited  
SOURCE: PCT Int. Appl., 11 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9607710	A1	19960314	WO 95-GB2034	19950830
W: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM				
RW: KE, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9533523	A1	19960327	AU 95-33523	19950830
GB 2307653	A1	19970604	GB 97-4696	19950830
GB 2307653	B2	19990127	GB 94-17974	19940907
PRIORITY APPLN. INFO.:			WO 95-GB2034	19950830

OTHER SOURCE(S): MARPAT 124:347873

AB Drilling muds are employed when drilling an oil well, primarily to carry rock cuttings up to the surface and out of the wellbore. Both water-based and oil-based muds are used, but the latter possess many operational advantages. However, conventional oil-based muds do suffer from a no. of undesirable characteristics - the oil may be retained on the drill cuttings, and the presence of large amts. of the essential emulsifiers and other oil wetting agents can alter the wettability of oil-holding reservoir formations through which the borehole passes, thereby reducing their permeability to oil, and so making it more difficult to ext. the oil therefrom. The present invention seeks to provide an alternative way of prepg. water-in-oil emulsions so that in such emulsions high water levels and high stability can still be achieved but with the use of minimal levels of surfactant. More specifically, the invention suggests that the stability of water-in-oil emulsions may be significantly enhanced by using as a stabilizing agent a particular type of silane - thus, first there is formed a water-in-oil emulsion with a fine dispersed aq. phase in the continuous oil phase, and then there is added to this a silane having bonds which hydrolyze and condense to form a cross-linked polymer at the water-oil interface.

**TITLE: Surfactant composition for invert emulsified drilling muds**

L7 ANSWER 9 OF 41 CA COPYRIGHT 1999 ACS  
ACCESSION NUMBER: 124:61206 CA  
INVENTOR(S): Wall, Kevin; Zard, Pauline William; Barclay-Miller, David James; Martin, David William  
PATENT ASSIGNEE(S): Burwood Corp. Ltd., UK  
SOURCE: PCT Int. Appl.. 18 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9530722	A1	19951116	WO 95-GB1013	19950504
W: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TT				
RW: KE, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9523501	A1	19951129	AU 95-23501	19950504
PRIORITY APPLN. INFO.:			GB 94-8614	19940504
			GB 94-9602	19940513
			GB 94-21375	19941024
			WO 95-GB1013	19950504

AB A nonionic surfactant compn. for producing a stable aq.-inorg. emulsion is described. The compn. comprises (a) at least one org. polyether or org. polyamine; and (b) at least org. acid deriv.

*amide*

**TITLE: Drilling mud containing natural triglyceride ester oil and diluent**

L7 ANSWER 10 OF 41 CA COPYRIGHT 1999 ACS

ACCESSION NUMBER: 124:12154 CA

INVENTOR(S): Wilkinson, Alastair Ord; Grigson, Stephen John

Wentworth; Turnbull, Robert William

PATENT ASSIGNEE(S): Heriot-Watt University, UK

SOURCE: PCT Int. Appl.. 22 pp.

CODEN: PIXXDZ

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9526386	A1	19951005	WO 95-GB680	19950324
W: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM				
RW: KE, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9519573	A1	19951017	AU 95-19573	19950324
EP 753034	A1	19970115	EP 95-912366	19950324
EP 753034	B1	19981111		
R: DK, GB, NL				
NO 9604048	A	19961122	NO 96-4048	19960926
PRIORITY APPLN. INFO.:				
			GB 94-6057	19940326
			WO 95-GB680	19950324

AB The present invention relates to an invert emulsion **drilling mud** having a continuous oil phase substantially free of mineral oil; a disperse aq. phase; **emulsifier** means; weighting agent means. In one aspect of the invention of oil phase consists essentially of a natural triglyceride ester oil which oil has a substantially reduced gum content. In another aspect the oil phase consists essentially of a natural triglyceride ester oil and a non-toxic biodegradable viscosity reducing diluent, said emulsion has a pH which is not strongly alk. and is substantially lime-free, and said **emulsifier** means is effective under not strongly alk. substantially lime-free conditions.

□ TITLE: Purified paraffins as lubricants, rate of penetration enhancers, and spotting fluid additives for water-based drilling fluids

L7 ANSWER 3 OF 41 CA COPYRIGHT 1999 ACS  
ACCESSION NUMBER: 130:15658 CA  
INVENTOR(S): Halliday, William S.; Clapper, Dennis K.  
PATENT ASSIGNEE(S): USA  
SOURCE: U.S.. 4 pp.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5837655	A	19981117	US 96-641595	19960501

AB The present invention provides nontoxic, biodegradable purified paraffins which may be used as lubricants, rate of penetration enhancers, and/or spotting fluids for water-based drilling fluids. When used as a spotting fluid additive, the paraffin isomers preferably are supplemented with functional additives, namely emulsifiers, viscosifiers, surfactants, and/or brine. When used as lubricants and/or rate of penetration enhancers, the paraffin isomers preferably are used alone or in combination with surfactants.

**TITLE:** Drilling fluid composition containing a water-soluble glycol ether.

L7 ANSWER 11 OF 41 CA COPYRIGHT 1999 ACS  
ACCESSION NUMBER: 118:150754 CA  
INVENTOR(S): Brankling, David  
PATENT ASSIGNEE(S): UK  
SOURCE: Brit. UK Pat. Appl.. 9 pp.  
CODEN: BAXXDU  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 2252993	A1	19920826	GB 91-3834	19910223
GB 2252993	B2	19940928		
WO 9214798	A1	19920903	WO 92-GB251	19920212
W: GB, NO, US				
RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FR, GA, GB, GN,				
GR, IT, LU, MC, ML, MR, NL, SE, SN, TD, TG				
GB 2264131	A1	19930818	GB 93-2706	19930211
GB 2264131	B2	19950920		
PRIORITY APPLN. INFO.:			GB 91-3834	19910223
			WO 92-GB251	19920212
			GB 92-21226	19921009

AB The drilling fluid contains a water-sol. glycol ether maintained as the continuous phase of an emulsion by the action of a brine compn., e.g., CaCl<sub>2</sub> or NaCl, emulsified into the glycol ether by suitable surfactants. The glycol ether is chosen to show substantial soly. in seawater or fresh water such that upon disposal of the drilling fluid or coated drilled coating the emulsion ether phase will resolubilize and be removed from the immediate environment by degrdn. The drilling mud may be used to drill through water-sensitive rocks.

☐ **TITLE:** The significance of formation damage caused by the adsorption oil-based mud surfactant

L7 ANSWER 12 OF 41 CA COPYRIGHT 1999 ACS  
ACCESSION NUMBER: 117:215759 CA  
AUTHOR(S): McDonald, J. A.; Buller, D. C.  
CORPORATE SOURCE: BP Res. Cent., Sunbury-on-Thames/Middlesex, TW16 7LN, UK  
SOURCE: J. Pet. Sci. Eng. (1992), 6(4), 357-65  
CODEN: JPSEEG; ISSN: 0920-4105  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Formation damage caused by oil-based mud emulsifiers commonly used in the North Sea was studied. Formation damage caused simply by adsorption of surfactants typically formulated into oil-based muds may be of only minor significance. Although a reasonable correlation between wettability alteration and relative permeability redn. was found, there is evidence to suggest that the damage caused by the oil-based mud emulsifiers was not attributable to wettability effects alone. Pure grade surfactant induces strong changes in sandstone wettability but causes only minor permeability impairment, compared with equiv. amts. of com. emulsifier. Pptn. of org. material (wax) derived from the com. emulsifier was identified as contributing significantly to the damage obsd.

☐ **TITLE:** Drilling fluids containing fish oil

L7 ANSWER 13 OF 41 CA COPYRIGHT 1999 ACS  
ACCESSION NUMBER: 117:11281 CA  
INVENTOR(S): Williams, Dennis Colin  
PATENT ASSIGNEE(S): Neth.  
SOURCE: Brit. UK Pat. Appl., 14 pp.  
CODEN: BAXXDU  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 2246802	A1	19920212	GB 91-16840	19910805
GB 2246802	B2	19940831	GB 90-17212	19900806

PRIORITY APPLN. INFO.:

AB A drilling mud comprises fish oil optionally in combination with other oils such as mineral oils and other drilling mud components such as gelling agent (e.g., bentonite) and weighting agent (e.g., barite). Water-based and oil-based drilling muds are described. Thus, an oil-based drilling mud contained Clarisal 350 (hydrocarbon oil) 171.7, fish oil 35, Ethylan HA 3.18, Ethylan Reo (emulsifier) 2.27, Ethylan 44 2.27, water 13.4, barite 117.5, and bentonite 4.54 kg.

□ TITLE: Non-hydrocarbon invert emulsions for use in well drilling operations

L7 ANSWER 14 OF 41 CA COPYRIGHT 1999 ACS  
 ACCESSION NUMBER: 116:87435 CA  
 INVENTOR(S): Bland, Ronald G.; Clapper, Dennis K.  
 PATENT ASSIGNEE(S): Baker Hughes, Inc.. USA  
 SOURCE: U.S., 8 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5057234	A	19911015	US 90-536735	19900611
CA 2044099	AA	19911212	CA 91-2044099	19910607
NO 9102215	A	19911212	NO 91-2215	19910610
EP 461584	A2	19911218	EP 91-109478	19910610
EP 461584	A3	19920916		
EP 461584	B1	19951220		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SB				
AT 131856	E	19960115	AT 91-109478	19910610
US 5141920	A	19920825	US 91-771767	19911004
			US 90-536735	19900611

PRIORITY APPLN. INFO.:

AB Brine-in-glycol emulsions served as replacement fluid for an oil-based mud in drilling comprises a glycol external phase and a brine internal phase in which the external phase is sol. or dispersible in seawater at a salinity of <3%, an emulsifier (e.g., lime), and a weighting agent (e.g., barite).

**□ TITLE: Drilling fluids based on polymer complexes**

L7 ANSWER 15 OF 41 CA COPYRIGHT 1999 ACS  
ACCESSION NUMBER: 114:125677 CA  
INVENTOR(S): Peiffer, Dennis G.; Lundberg, Robert D.; Sedillo,  
Lawrence P.; Newlove, John C.  
PATENT ASSIGNEE(S): Exxon Research and Engineering Co., USA  
SOURCE: Statutory Invent. Regist., 6 pp.  
CODEN: SRXXEV  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 837	H1	19901106	US 89-375445	19890705
			US 84-651906	19840919
			US 86-894561	19860808
			US 87-79130	19870729

PRIORITY APPLN. INFO.:

AB An oil-based drilling mud comprises an org. liq. substantially immiscible in water, 1-10 wt. parts of water per 100 wt. parts of the org. liq., 20-50 lb/bbl of >1 emulsifier, weighting material necessary to achieve the desired d., and 0.25-4.0 lb/bbl of a hydrocarbon-sol. polymeric complex formed from a water-insol. anionic polymer and a cationic polymer, e.g., Zn sulfonated EPDM and styrene-4-vinylpyridine copolymer.

**□ TITLE: Polyamine sensitization in offshore workers handling drilling muds**

L7 ANSWER 16 OF 41 CA COPYRIGHT 1999 ACS  
ACCESSION NUMBER: 114:68266 CA  
AUTHOR(S): Ormerod, A. D.; Wakeel, R. A.; Mann, T. A. N.; Main,  
R. A.; Aldridge, R. D.  
CORPORATE SOURCE: Dermatol. Dep., Aberdeen R. Infirm.,  
Foresterhill/Aberdeen, AB9 2ZB, UK  
SOURCE: Contact Dermatitis (1989), 21(5), 326-9  
CODEN: CODEDG; ISSN: 0105-1873  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB In patch testing patients with allergy to drilling mud, polyamine (diethylenetriamine and triethylenetetramine) sensitivity was found in 5 patients. All 5 patients were also allergic to emulsifiers. These emulsifiers are crosslinked fatty acid amido-amines, in which unreacted amine groups are thought to cross-sensitize with these constituent polyamines. Cross-reactivity between ethylenediamine, diethylenetriamine, and triethylenetetramine was found in 9 subjects.

# **TITLE: The use of polyalphaolefin in downhole drilling**

L7 ANSWER 17 OF 41 CA COPYRIGHT 1999 ACS  
 ACCESSION NUMBER: 112:39569 CA  
 INVENTOR(S): Trahan, David Owen; Faulk, Michael Brent  
 PATENT ASSIGNEE(S): Coastal Mud, Inc., USA  
 SOURCE: Eur. Pat. Appl., 16 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 325466	A2	19890726	EP 89-300524	19890119
EP 325466	A3	19910123		
EP 325466	B1	19970319		
R: AT, DE, FR, GB, IT, NL				
US 4876017	A	19891024	US 88-145149	19880119
US 5045219	A	19910903	US 88-275201	19881122
WO 8906676	A1	19890727	WO 89-US78	19890110
W: AU, BR, DK, JP, NO				
RW: BJ, CF, CG, CM, GA, ML, MR, SN, TD, TG				
AU 8930496	A1	19890811	AU 89-30496	19890110
AU 619253	B2	19920123		
BR 8904793	A	19900821	BR 89-4793	19890110
JP 02503010	T2	19900920	JP 89-502137	19890110
CA 1318494	A1	19930601	CA 89-588095	19890112
AT 150477	E	19970415	AT 89-300524	19890119
NO 8903712	A	19891110	NO 89-3712	19890918
PRIORITY APPLN. INFO.:				
			US 88-145149	19880119
			US 88-275201	19881122
			WO 89-US78	19890110

AB A synthetic poly-.alpha.-olefin (PAO) contg. <0.5% 1-decene monomer is blended with an emulsifier additive (5-30% concn.) to prep. a drilling fluid composite with 5-90% concn. of PAO. The resulting PAO/emulsifier blend serves as a lubricant and/or spotting fluid in downhole drilling and is nontoxic to marine life. The water-base drilling mud contg. 0.25-6.0 vol.% PAO/emulsifier blend lubricates the drill string or reduces the differential pressure between the wall of the borehole and the drill string so that the drill string is free to rotate. The PAO/emulsifier blend also acts as a spotting fluid to release a stuck drill pipe. The PAO/emulsifier blend is introduced into the mud system as a pill which is circulated downhole through the annulus to the depth at which the pipe is stuck. The blend acts on the differential forces between the wall mud cake and the pipe to reduce the differential pressure between the pipe and the formation. so that the pipe is freed. and drilling can be resumed.

□ **TITLE:** Fluid-loss control additive for inverse-emulsion drilling fluids and method of preparation

L7 ANSWER 19 OF 41 CA COPYRIGHT 1999 ACS

ACCESSION NUMBER: 110:79057 CA

INVENTOR(S): Clapper, Dennis K.; Salisbury, Darrell P.

PATENT ASSIGNEE(S): Milchem, Inc., USA

SOURCE: U.S., 8 pp. Cont.-in-part of U.S. Ser. No. 798,965.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4728444	A	19880301	US 86-867083	19860527
US 4735732	A	19880405	US 85-798965	19851118
NO 8602580	A	19870519	NO 86-2580	19860625
			US 85-798965	19851118

**PRIORITY APPLN. INFO.:**

AB Title additive contains the pyrolyzed products prepd. by mixing and heating a finely-divided humic acid-contg. material and a primary C10-20-alkyl amine, a primary amine having one C10-20-alkyl-substituted phenyl radical, or a secondary amine having >1 C8-20-alkyl radicals. Thus, an 80:20 oil/water inverse-emulsion mud (weighted to 12 lb/gal), contg. primary emulsifier (oxidized tall oil) 1-2 and secondary emulsifier (polyamide type) 0.72 gal/bbl, alk. earth oxide 4, organophilic clay 2.5, and an additive 7.5 lb/bbl; prepd. by pyrolysis of North Dakota lignite and vegetable oil amine in a reaction vessel kept at atm. pressure, was stirred for 30 min; the oil phase was No. 2 diesel oil and the water phase was a 30 wt.% CaCl2 brine soln. The mud samples were hot-rolled at 200.degree. for 64 h before detg. the 30-min fluid loss (API RP 13B) at 200.degree. and 500 psi. Using pyrolyzed lignite-vegetable oil amine products provided a very satisfactory invert-emulsion drilling mud.

**TITLE: Drilling fluids based on hydrocarbon soluble polyampholytes**

L7 ANSWER 20 OF 41 CA COPYRIGHT 1999 ACS

ACCESSION NUMBER: 109:233972 CA

INVENTOR(S): Peiffer, Dennis G.; Lundberg, Robert D.; Sedillo,

Lawrence P.; Newlove, John C.

PATENT ASSIGNEE(S): Exxon Research and Engineering Co., USA

SOURCE: Statutory Invent. Regist.. 6 pp. Cont.-in-part of U.S.

Ser. No. 404, abandoned.

CODEN: SRXXEV

DOCUMENT TYPE: Patent

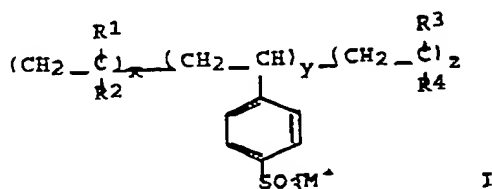
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 495	H1	19880705	US 87-72300	19870713
PRIORITY APPLN. INFO.:			US 84-651879	19840919
			US 85-770605	19850829
			US 87-404	19870105

GI



AB An oil-based drilling mud comprises (a) a hydrocarbon liq. substantially immiscible in water, (b) 1-100, 100 wt. ratio water/the hydrocarbon liq., (c) >1 emulsifier 2-50, (d) a wetting agent 0.5-5, (e) a weighting agent 50-750, and (f) a water-insol., oil-sol. copolymer 0.1-25 lb/bbl having the formula I [R1 and R3 = H or Me, R2 = C6H4Me, R4 = C5H4N, CnN2nNH3, or CnH2nN(Me)3, in which n = 1-30; x = 40-98, y = 1-50, and z = 1-50 mol%, but y + z < 60 mol%; M = an amine or a metal cation]. The polyampholyte copolymers are useful as a viscosity improver, and is preferably a sulfonated styrene-4-vinyl pyridine copolymer.

☐ TITLE: Drilling fluids

L7 ANSWER 21 OF 41 CA COPYRIGHT 1999 ACS  
ACCESSION NUMBER: 108:207503 CA  
INVENTOR(S): Lundberg, Robert Dean; Peiffer, Dennis George;  
Newlove, John Christopher; Werlein, Eugene Richard  
PATENT ASSIGNEE(S): Exxon Research and Engineering Co., USA  
SOURCE: Eur. Pat. Appl., 8 pp.  
CODEN: EPTXDD  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 259111	A2	19880309	EP 87-307634	19870828
EP 259111	A3	19890222		
EP 259111	B1	19910710		
R: CH, DE, FR, GB, LI, NL, SE				
CA 1295473	A1	19920211	CA 87-545633	19870828
NO 8703666	A	19880303	NO 87-3666	19870901
AU 8777781	A1	19880310	AU 87-77781	19870902
AU 606883	B2	19910221		
US 4978461	A	19901218	US 89-325423	19890320
PRIORITY APPLN. INFO.:			US 86-902772	19860902
			US 85-725362	19850419

AB The oil-based drilling mud comprises: (1) a hydrocarbon liq. immiscible with water, (2) 1-10 wt. parts water per 100 parts of the hydrocarbon liq., (3) 0.05-0.14 kg/L of an emulsifier, (4) weighting material in an amt. necessary to achieve the desired d., and (5) 0.0007-0.017 kg/L of a neutralized sulfonated thermoplastic terpolymer (mol. wt. 5000-200,000). The thermoplastic polymer has 5-10 mequiv. of a metal, amine, or ammonium neutralized sulfonate groups per 100 g of the neutralized sulfonated thermoplastic terpolymer. The terpolymer can be a p-methylstyrene/metal neutralized styrene sulfonate/styrene terpolymer formed by a free radical emulsion polymer.

# **TITLE: Thickeners for aqueous media**

L7 ANSWER 24 OF 41 CA COPYRIGHT 1999 ACS  
 ACCESSION NUMBER: 105:154175 CA  
 INVENTOR(S): Chaudhry, Arshad Ul Haq  
 PATENT ASSIGNEE(S): Scott Bader Co. Ltd., UK  
 SOURCE: Eur. Pat. Appl.. 39 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 186361	A2	19860702	EP 85-308928	19851209
EP 186361	A3	19880420		
EP 186361	B1	19900912		
EP 186361	B2	19940427		
R: BE, CH, DE, FR, GB, IT, LI, NL, SE				
JP 61264056	A2	19861121	JP 85-276146	19851210
			GB 84-31150	19841210
			GB 85-1786	19850124
			GB 85-5076	19850227

PRIORITY APPLN. INFO.:

AB Thickeners for aq. esp. electrolytic. media comprise water-in-oil emulsions of crosslinked, water-sol. polymers contg. ionizable groups, and are useful in drilling muds, detergents, and printing pastes. Thus, redox polym. of acrylic acid 200, 2-acrylamido-2-methylpropanesulfonic acid 2.5, 2-sulfoethyl methacrylate 2.5, and methylenabisacrylamide 0.1 part dispersed in aq. NH3 150, Isopar L 10.0, and Isopar M 240 parts and adding 10 parts each Tween 20, Tween 80, Ethylan IV, and Ethylan BCP gave a polymer emulsion with viscosity 700 cP. A printing paste contg. 4% this emulsion had viscosity 320 P and good printing properties on polyester.

**TITLE: Low and high temperature drilling fluids based on sulfonated terpolymer ionomers**

L7 ANSWER 25 OF 41 CA COPYRIGHT 1999 ACS  
 ACCESSION NUMBER: 103:198370 CA  
 INVENTOR(S): Peiffer, Dennis G.; Lundberg, Robert D.; Pober, Kenneth W.  
 PATENT ASSIGNEE(S): Exxon Research and Engineering Co., USA  
 SOURCE: U.S., 5 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4537688	A	19850827	US 83-547906	19831102

AB Low- and high-temp. oil-based drilling muds contain 1-10 wt. parts water or salt water per 100 wt. parts hydrocarbon liq., 20-50 lb/bbl of .gtoreq.1 emulsifier, a wetting agent (e.g., an alkylarylsulfonate), a weighting agent (to give the mud a sp. gr. 7-20 lbs/gal), and 0.25-6 lb/bbl of a neutralized sulfonated thermoplastic copolymer (i.e., tert-butylstyrene-Na styrenesulfonate-styrene copolymer (I) [99106-53-3], with no.-av. mol. wt. 5000-200,000 and 5-10/ mequiv sulfonate groups/100 g), prepd. by free-radical emulsion polymn., as a viscosity-increasing agent. Thus, muds prepd. from No. 2 diesel fuel 205.82, Oil Faze 34.76, SE 11 1.5, DV 33 1.5, barite 226.35, CaCl2 4.4, and I (contg. 5 or 25 mol% tert-butylstyrene units) 1.5-3.0 g had high-temp. rheol. properties superior to those of the base mud or the mud contg. sulfonated polystyrene viscosifier.

□ TITLE: Fast drilling invert emulsion drilling fluids

L7 ANSWER 26 OF 41 CA COPYRIGHT 1999 ACS

ACCESSION NUMBER:

103:24703 CA

INVENTOR(S):

Walker, Thad O.; Simpson, Jay P.; Dearing, Harry L.

PATENT ASSIGNEE(S):

O'Brien-Goins-Simpson and Associates, USA

SOURCE:

U.S.. 7 pp.

CODEN: USXXAM

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4508628	A	19850402	US 83-441418	19830519

AB Oil-based invert emulsion drilling fluids for fast drilling contain as a base oil a low-viscosity nontoxic biodegradable hydrocarbon oil with viscosity (at 25.degree.) <1.5 cP, flash point .gtoreq.60.degree., aniline point of .gtoreq.80.degree., and <1 vol.% arom. hydrocarbons. Other additives include EZ MUL NT [96956-43-3] emulsifier, Geltone II [89338-64-7] (organophilic bentonite) suspending agent, barite weighting agent, ethylene glycol [107-21-1] temp.-stabilizing agent, and Duratone HT [96956-35-3] (modified lignite) fluid loss-control agent. The title fluids have a low viscosity at high shear rates; the low bit viscosity provides for faster penetration.

**TITLE: Prevention of drilling-fluid loss in subterranean formations**

L7 ANSWER 27 OF 41 CA COPYRIGHT 1999 ACS

ACCESSION NUMBER: 103:8765 CA  
 INVENTOR(S): Son, Adelina Javier; Loftin, Royal Edward  
 PATENT ASSIGNEE(S): Halliburton Co., USA  
 SOURCE: Eur. Pat. Appl., 43 pp.  
 CODEN: EPXXDW

DOCUMENT TYPE: Patent  
 LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 137683	A2	19850417	EP 84-305788	19840823
EP 137683	A3	19860102		
EP 137683	B1	19890301		
R: BE, DE, FR, GB, IT, NL, SE				
US 4525285	A	19850625	US 83-528326	19830831
AU 8430811	A1	19850307	AU 84-30811	19840718
AU 559755	B2	19870319		
CA 1217322	A1	19870203	CA 84-459138	19840718
NO 8403250	A	19850301	NO 84-3250	19840815
			US 83-528326	19830831

**PRIORITY APPLN. INFO.:**

AB A drilling fluid was formulated to contain a seepage-loss reducer contg. amorphous silicates (SiO<sub>2</sub>-alkali metal oxide ratio 1.5-3.3:1) which react with polyvalent cations in formation water giving gelled seals. Thus, a drilling fluid contg. diesel fuel, brine water, K silicate 14.25 kg/m<sup>3</sup>, 20-25.6 kg/m<sup>3</sup> emulsifiers and viscosifiers, and other common additives showed only a trace of loss in the API RP 13B test. The same fluid, but without K silicate, gave 22.6 mL loss in the API test.

□ TITLE: **Drilling mud viscosification agents based on sulfonated ionomers**

L7 ANSWER 28 OF 41 CA COPYRIGHT 1999 ACS  
ACCESSION NUMBER: 101:40814 CA  
INVENTOR(S): Thaler, Warren A.; Walker, Thad O.; Lundberg, Robert D.; Wagensommer, Joseph  
PATENT ASSIGNEE(S): Exxon Research and Engineering Co. . USA  
SOURCE: U.S.. 5 pp.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4442011	A	19840410	US 81-332770	19811221

AB Salts of 2-8 wt.% sulfonated ethylene (50 wt.%) -propylene-5-phenyl-2-norbornene (5.0 wt.%) terpolymer (5-30 mequiv. sulfonated group/100 g sulfonated polymer, av. mol. wt. 20,000-80,000, and Mooney viscosity 15-50) are viscosifiers for oil-based drilling muds. The plastic viscosities at 300.degree.F with and without 1 lb/bbl of Na sulfonated terpolymer in a mud contg. No. 2 diesel oil, aq. CaCl2, emulsifier, weighting agent, and 2 lb/bbl of amine clay were 20 and 30 cP, resp. The Ca salt of the sulfonated polymer was similarly used.

□ **TITLE:** Additive composition for release of a stuck drill pipe

L7 ANSWER 29 OF 41 CA COPYRIGHT 1999 ACS  
ACCESSION NUMBER: 100:141965 CA  
INVENTOR(S): Brownawell, Darrell W.; Gutierrez, Antonio; Matthews, Patricia C.; Walker, Thad O.  
PATENT ASSIGNEE(S): Exxon Research and Engineering Co. , USA  
SOURCE: U.S., 8 pp.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4427564	A	19840124	US 82-428825	19820930

AB Comps. for release of stuck drill stem in the borehole based on propoxylated lactone acid.. e.g., a C8-22 alkyl lactone acid having 10-13 propylene glycol units. an oil-sol. emulsifier-wetting agent, and a liq. hydrocarbon diluent are described. Thus, a formulation consisting of C10 alkyl lactone acid propoxylate 17, sorbitan monooleate 13, and paraffin oil 70 wt.% provided a good system for emulsification with equal vol. of water which is added to the drilling mud or poured on filter cake sticking to pipe. This compn. produced 37.6% redn. in sticking force vs. 1.5% for compn. contg. tetrapropenyl lactone polypropylene glycol ester.

□ **TITLE: Emulsifying additive for oil base drilling fluids**

L7 ANSWER 30 OF 41 CA COPYRIGHT 1999 ACS  
 ACCESSION NUMBER: 98:129004 CA  
 INVENTOR(S): Barthel, Horst K. F.; Scoggins, Chrys  
 PATENT ASSIGNEE(S): Obi-Hughes, Inc., USA  
 SOURCE: PCT Int. Appl., 39 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 8203389	A1	19821014	WO 81-US393	19810327
W: GB, NO, US				
RW: AT, DE, FR, NL				
EP 77330	A1	19830427	EP 81-901936	19810327
R: AT, DE, FR, NL				
NO 8203928	A	19821124	NO 82-3928	19821124
			WO 81-US393	19810327

PRIORITY APPLN. INFO.:

AB Oil-base drilling fluids are stabilized against contamination by water-sol. alk. earth salts by the addn. of a sulfonamide additive which is the reaction product of an alkylarenesulfonyl chloride and a water-sol. amine such as alkylated and di-alc. amines. Thus, an oil-based drilling mud [contg. N,N-bis(2-hydroxyethyl)-p-dodecylbenzenesulfonamide [85077-82-3] (2.5 lb/bbl) to stabilize the fluid against Ca salt contamination] was hot-rolled for 16 h at 550.degree.F; the sample had a breakdown voltage (a measure of the strength of the emulsion) of 1800 V, vs. 1600 V for a sample contg. a com. additive.

# TITLE: Invert emulsions for well-drilling comprising a polydiorganosiloxane

L7 ANSWER 31 OF 41 CA COPYRIGHT 1999 ACS  
 ACCESSION NUMBER: 98:19267 CA  
 INVENTOR(S): Romanesko, David Joseph; Schiefer, Harry Martin  
 PATENT ASSIGNEE(S): Dow Corning Corp., USA  
 SOURCE: Eur. Pat. Appl.. 35 pp.  
 CODEN: EPXDDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 59037	A1	19820901	EP 82-300588	19820205
EP 59037	B1	19850522		
R: BE, DE, FR, GB, IT				
US 4381241	A	19830426	US 81-236968	19810223
WO 8202898	A1	19820902	WO 81-US1638	19811210
W: AU, BR, JP, NO				
AU 8280805	A1	19820914	AU 82-80805	19811210
JP 58500066	T2	19830113	JP 82-500450	19811210
JP 03024513	B4	19910403		
CA 1177634	A1	19841113	CA 81-392106	19811211
NO 8203528	A	19821025	NO 82-3528	19821025
NO 157301	B	19871116		
NO 157301	C	19880224		
PRIORITY APPLN. INFO.:			US 81-236968	19810223
			WO 81-US1638	19811210

AB High-d. invert emulsions of light and heavy brines in a liq. hydrocarbon are prep'd. that contain 0.05-15 wt.% of a polydiorganosiloxane bearing .gtoreq.1 polyoxyalkylene radical and .gtoreq.1 monovalent hydrocarbon radical having 6-8 C atoms. The emulsions are useful in well drilling as drilling fluids, completion fluids, packer fluids, spacer fluids, and workover fluids because they are thermally stable and can be formulated to relatively high d., with or without adding weighting agents (e.g., CaBr<sub>2</sub> brines and/or ZnBr<sub>2</sub> brines). Thus, 6 wt. parts trimethylsiloxy-end-stopped polydiorganosiloxane contg. .apprx.64 units of (CH<sub>3</sub>) (C<sub>8</sub>H<sub>17</sub>)SiO<sub>2</sub>/2 siloxane and .apprx.1 unit of (CH<sub>3</sub>) (HO(CH<sub>2</sub>CH<sub>2</sub>O)<sub>24</sub> (CH<sub>2</sub>CHCH<sub>3</sub>O)<sub>24</sub> CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>)SiO<sub>2</sub>/2 siloxane units per mol. was dissolved in 34 wt. parts diesel fuel. The resulting soln. was agitated and a brine contg. 15 wt. parts of an aq. soln. of CaBr<sub>2</sub> and 45 wt. parts of an aq. soln. of CaBr<sub>2</sub> and ZnBr<sub>2</sub> was slowly added. The mixt. was stirred until the brine particles had a diam. of .ltoreq.1 .mu.. A brine-in-liq. hydrocarbon emulsion was obtained that had a viscosity of 200 cP at 25.degree. and did not sep. when held at 350.degree. for 16 h.

☐ **TITLE:** An oil-based drilling mud

L7 ANSWER 32 OF 41 CA COPYRIGHT 1999 ACS  
 ACCESSION NUMBER: 93:188978 CA  
 INVENTOR(S): Sharma, Surendra Mani; Girdhar, Kanwal Krishan;  
 Mathur, Rajendra Prasad Meta Prasad  
 PATENT ASSIGNEE(S): Oil and Natural Gas Commission, India  
 SOURCE: Indian. 8 pp.  
 CODEN: INXXAP  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
IN 146461	A	19790609	IN 77-DE125	19770603
IN 144648	A	19780527	IN 76-DE77	19761229
			IN 76-DE77	19761229

PRIORITY APPLN. INFO.:

AB An oil-based drilling fluid is prepd. by adding a bitumen-based emulsifier to a mineral oil (e.g., a high-speed diesel fuel), stirring the mixt., and adding water (1:1-3 ratio of water vol. to bitumen wt.). The emulsifier is made from 80/100 grade bitumen by heating a soln. of the bitumen, adding concd. H2SO4 to the heated soln., cooling the mixt., and adding quicklime. The drilling fluid may also contain Al stearate [637-12-7] as an emulsifier.

☐ **TITLE:** Inverflo - an emulsifier for invert emulsion mud for high temperature deep wells

L7 ANSWER 33 OF 41 CA COPYRIGHT 1999 ACS  
 ACCESSION NUMBER: 93:75135 CA  
 AUTHOR(S): Sharma, S. M.; Girdhar, R. K.; Mathur, R. M.  
 CORPORATE SOURCE: India  
 SOURCE: ONGC Bull. (1978), 15(1-2), 65-72  
 CODEN: BONCDF  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB An emulsifier (Inverflo, a sulfonated bitumen) was developed as a principal emulsifier for dispersing water in an oil continuous phase. Inverflo along with other indigenous additives such as Al and alk. earth metal soaps was been used for the prepn. of invert emulsion muds. This system was characterized by high water tolerance and high elec. stability and is thermostable even at high mud wts.

**TITLE: Emulsifier for use with an oil-based drilling mud**

L7 ANSWER 34 OF 41 CA COPYRIGHT 1999 ACS

ACCESSION NUMBER: 92:96583 CA  
INVENTOR(S): Sharma, Surendra Mani; Girdhar, Kamwal Krishan;  
Mathur, Rajendra Prasad Mata Prasad  
PATENT ASSIGNEE(S): Indian Institute of Petroleum, India  
SOURCE: Indian, 6 pp.  
CODEN: INXXAP

DOCUMENT TYPE: Patent  
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
IN 144648	A	19780527	IN 76-DE77	19761229
IN 146461	A	19790609	IN 77-DE125	19770603
			IN 76-DE77	19761229

PRIORITY APPLN. INFO.:

AB An emulsifier is prepd. by heating an 80/100 grade bitumen soln. to .1toeq.120.degree. adding concd. H2SO4 while maintaining the temp. during reaction. The reaction product is cooled to room temp. and quicklime is added.

# **TITLE: Oil well fluids and dispersants**

L7 ANSWER 35 OF 41 CA COPYRIGHT 1999 ACS  
 ACCESSION NUMBER: 90:106711 CA  
 INVENTOR(S): Carney, Leroy L.  
 PATENT ASSIGNEE(S): Halliburton Co., USA  
 SOURCE: U.S.. 11 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 6  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4108779	A	19780822	US 76-677199	19760415
US 3896031	A	19750722	US 73-353060	19730420
US 3850248	A	19741126	US 73-417431	19731119
US 4233162	A	19801111	US 78-875722	19780207

PRIORITY APPLN. INFO.:

US 73-353060	19730420
US 73-356239	19730501
US 73-417431	19731119
US 74-500999	19740827
US 75-543723	19750124
US 76-677199	19760415

AB Spacer fluid compns. having excellent thermal and pressure stability for spacing cements from drilling muds in oil and gas wells are described. Thus, a spacer fluid emulsion, i.e., 50-50 vol. % H2O-oil, contains 25 lb emulsifier/bbl. where the emulsifier consists of lime 68.1, bis(2-hydroxyethyl)oleamide [93-83-4] 4.9, oleic acid [112-80-1] 5, red oil 5, oleic acid dimer [7049-68-5] 10, and asphaltic resin 12 wt. %. The spacer fluid also contains 4 lb/bbl of a surfactant-dispersant consisting of 25-75 wt. % N-methyl-N-oleoyltaurine and sulfite waste liquor.

□ TITLE: Spacer fluid for spacing drilling muds and cement

L7 ANSWER 36 OF 41 CA COPYRIGHT 1999 ACS  
ACCESSION NUMBER: 82:101060 CA  
INVENTOR(S): Carney, Leroy I.  
PATENT ASSIGNEE(S): Halliburton Co.  
SOURCE: U.S.. 8 pp.  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 6  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3850248	A	19741126	US 73-417431	19731119
CA 1062448	A1	19790918	CA 74-209321	19740916
IT 1022483	A	19780320	IT 74-27920	19740930
GB 1480624	A	19770720	GB 74-42664	19741001
SE 7412683	A	19750520	SE 74-12683	19741009
SE 392283	B	19770321		
NL 7413460	A	19750521	NL 74-13460	19741014
DE 2451773	A1	19750522	DE 74-2451773	19741031
DK 7405794	A	19750714	DK 74-5794	19741106
NO 7404133	A	19750521	NO 74-4133	19741118
AU 7475470	A1	19760520	AU 74-75470	19741118
ES 432054	A1	19770301	ES 74-432054	19741118
US 4108779	A	19780822	US 76-677199	19760415
US 4233162	A	19801111	US 78-875722	19780207
			US 73-353060	19730420
			US 73-356239	19730501
			US 73-417431	19731119
			US 74-500999	19740827
			US 75-543723	19750124
			US 76-677199	19760415

PRIORITY APPLN. INFO.:

AB The use of a spacer fluid emulsion is described. The emulsion comprises approx. equal parts of hydrocarbon oil and water, and contains (per bbl) 15-40 lb oleamide deriv. emulsifier mixt. and 0.5-10 lb surfactant-dispersant, plus weighting material. The surfactant-dispersant is a 1:1 mixt. of waste sulfite liquor and the reaction product of oleyl chloride [112-77-6] and N-methyltaurine [107-68-6]. The emulsifier mixt. contains oleamide deriv., oleic acid [112-80-1], and oleic acid dimer [7049-68-5], adsorbed on diatomaceous earth or another carrier.

□ TITLE: Drilling fluids containing lignin derivatives

L7 ANSWER 37 OF 41 CA COPYRIGHT 1999 ACS  
ACCESSION NUMBER: 77:90950 CA  
INVENTOR(S): Kim, Chung S. Y.  
PATENT ASSIGNEE(S): Georgia-Pacific Corp.  
SOURCE: U.S.. 6 pp. Division of U.S. 3.538.071 (CA 74:23783z).  
CODEN: USXXAM  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3671428	A	19720620	US 70-13186	19700220

AB Emulsifiers for oil base muds are prepd. by reacting an oxidized lignin product with primary or secondary amines. The resulting salt on heating to 120.degree. (thermal decompn. temp.) is substantially converted to a N-contg. product, where the N is stable in an aq. alk. medium at room temp. The amines have Ph or C6-30 alkyl group substituents. Thus, a fermented Ca base spent sulfite liquor was oxidized in the prepn. of vanillin (I). After the sepn. of I the high mol. wt. material was pptd. by slowly adding concd. HCl to the oxidized product until the pH of 1-2. Then 50 g pptd. polymers, recovered by filtration, were mixed with 40 g com. fatty amine in 400 ml of PhMe and agitated in a bomb for 20 hr at 135.degree. and PhMe evapd. yielding 85 g of lignin derivs. (II). Ten g of II was mixed with 200 ml diesel fuel and 1 g NaOH (as a 25 wt. % soln.). followed by satd. salt brine, in an amt. of 150 ml. with vigorous mixing for 20 min. Stable emulsion resulted and only further brine addn. <1400 ml caused phase inversion, showing that II is a good emulsifier.

# **TITLE: Oil-base drilling fluid composition**

L7 ANSWER 39 OF 41 CA COPYRIGHT 1999 ACS  
 ACCESSION NUMBER: 76:35946 CA  
 INVENTOR(S): Miller, George  
 PATENT ASSIGNEE(S): Oil Base, Inc.  
 SOURCE: U.S.. 5 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 3622513	A	19711123	US 68-728331	19680510

AB Low fluid loss of oil-base muds contg.  
 .ltoreq.30-50 .mu. inert weighting material and blown asphalt results if  
 the asphalt (penetration .gtoreq.2) contains .gtoreq.45 wt. % TiO2 or Fe  
 oxide and Ca naphthenate (I) added previous to blowing. Asphalt and I are  
 present in sufficient amt. to support the oxides and to emulsify  
 the H2O present in drilling. The amts. of oxides are such that 5-22  
 lb/bbl are present in the mud. Thus, a series of mud samples, all  
 weighted to 16 lb/gal with BaSO4 of particle size 90% <200-mesh and 88%  
 <325-mesh, contained asphalt 42.5, Ca(OH)2 11, naphthenic acids 3.5 g and  
 diesel oil 300 and H2O 17.5 ml/bbl. Another sample contained 35 lb Fe  
 oxide and a 3rd 35 lb TiO2/bbl. After addn. of 3 lb of  
 alkylarenesulfonate/bbl to each, fluid loss was detd. by holding in a  
 filter-press at 300.degree.F and 500 psi for 30 min. Samples were also  
 hot rolled at 200.degree.F for 24 hr, then tested as above. Sepns. were:  
 control, 2.5 and 2.6 ml; Fe oxide-contg. sample, 2.2 and 2.4 ml; and  
 TiO2-contg. sample, 1.6 and 2.0 ml. resp.

□ **TITLE:** What's new in mud engineering? II. Major developments in oil muds, corrosion control, and completion fluids have combined to help solve complex deep drilling problems

L7 ANSWER 41 OF 41 CA COPYRIGHT 1999 ACS

ACCESSION NUMBER: 68:61185 CA

AUTHOR(S): Simpson, Jay P.

CORPORATE SOURCE: Bardid Div., Natl. Lead Co., Houston, Tex., USA

SOURCE: World Oil (1967), 164(6), 118-22

CODEN: WOOLAS

DOCUMENT TYPE: Journal

LANGUAGE: English

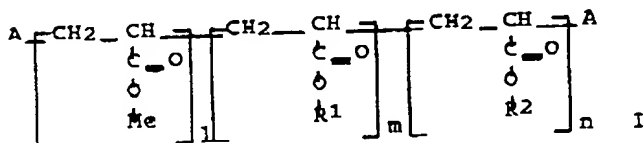
AB Oil muds having a degree of carrying capacity, filtration control, and temp. stability exceeding that of water mud systems can be prepd. by the addn. of oil-dispersible colloids. A no. of recognized causes of formation damage can be eliminated by the use of oil muds. Corrosion causes 70-80% of pipe failures, and is mainly due to O incorporated into the drilling fluid. H<sub>2</sub>S, CO<sub>2</sub>, and org. acids from the formation drilled, bacterial activity, and degradation of certain mud additives also cause corrosion. Org. acids, CO<sub>2</sub>, and O corrosion is less of a problem in alk. water-base muds, but H<sub>2</sub>S corrosion is a problem even in highly treated muds if high-strength metal is subjected to stress. Completion fluids offer more corrosion problems than do drilling fluids. Water or brine treated with a cationic corrosion inhibitor may be used if sufficient d. is obtainable. A water-based mud having 10.5-11.0 pH, contg. no significant amt. of S, and sterilized with a biocide might last several years if no high-strength pipe is involved and formation temps. do not exceed 300.degree.F.; otherwise the safest packer fluid is an oil mud conditioned to prevent settling of solids, to be elec. nonconducting, and to insure stable emulsification of all water.

**TITLE: Drilling mud emulsifier and inverse emulsion prepared with the emulsifier**

L10 ANSWER 2 OF 10 CA COPYRIGHT 1999 ACS  
 ACCESSION NUMBER: 115:117574 CA  
 INVENTOR(S): Binon, Jean Pierre  
 PATENT ASSIGNEE(S): Fr.  
 SOURCE: Can. Pat. Appl., 33 pp.  
 CODEN: CPXXEB  
 DOCUMENT TYPE: Patent  
 LANGUAGE: French  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CA 2024545	AA	19910306	CA 90-2024545	19900904 <--
FR 2651446	A1	19910308	FR 89-11601	19890905
FR 2651446	B1	19911227		
EP 420710	A2	19910403	EP 90-402386	19900829
EP 420710	A3	19910807		
EP 420710	B1	19941207		
R: DE, FR, GB, IT, NL, SE				
NO 9003856	A	19910306	NO 90-3856	19900904
US 5242899	A	19930907	US 92-826102	19920127 <-- (english)
PRIORITY APPLN. INFO.:			FR 89-11601	19890905
			US 90-577701	19900905

GI



AB The emulsifier is a compn. having formula I, where A is a terminal group common to polyacrylates, R1 is an oleyloxy group contg. .ltoreq.20 mol.% stearyloxy groups, R2 is a group of formula (C2H4O)x(C3H16O)yCH3, l is 1-3, m 0.85-3.5, n 0.12-0.5, x 8-24, preferably 10-16, and y 0.75-2.25, preferably 1-2. A suitable emulsifier has l = 2.0, m = 1.75, n = 0.25, x = 16, and y = 1.5. Salts or a mixt. of salts chosen from NaCl, CaCl2, MgCl2, CaBr2, KCl, CaBr2, and ZnBr2 are used in the brine: the oil component is HDF. The compn. has no solids, preventing skin formation, and is stable at >150.degree., without phase sepn., salt prepn., and coalescence.

☐ **TITLE:** The use of selected ester oils in drilling muds, especially for off-shore production of petroleum and natural gas

L10 ANSWER 3 OF 10 CA COPYRIGHT 1999 ACS  
**ACCESSION NUMBER:** 113:194693 CA  
**INVENTOR(S):** Mueller, Heinz; Herold, Claus Peter; Von Tapavicza, Stephan; Grimes, Douglas John; Braun, Jean Marc; Smith, Stuart P. T.  
**PATENT ASSIGNEE(S):** Henkel K.-G.a.A., Fed. Rep. Ger.; NL Petroleum Services Ltd.  
**SOURCE:** Ger. Offen.. 8 pp.  
**CODEN:** GWXXBX  
**DOCUMENT TYPE:** Patent  
**LANGUAGE:** German  
**FAMILY ACC. NUM. COUNT:** 1  
**PATENT INFORMATION:**

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3842703	A1	19900621	DE 88-3842703	19881219
EP 374672	A1	19900627	EP 89-122820	19891211
EP 374672	B1	19930310		
R: GR				
WO 9006981	A1	19900628	WO 89-EP1513	19891211
W: AU, BR, DK, NO, RO, SU				
RW: AT, BE, CH, DE, ES, FR, GB, IT, LU, NL, SE				
AU 9049549	A1	19900710	AU 90-49549	19891211 <--
AU 634207	B2	19930218		
EP 448646	A1	19911002	EP 90-901766	19891211
R: AT, BE, CH, DE, ES, FR, GB, IT, LI, LU, NL, SE				
BR 8907836	A	19911022	BR 89-7836	19891211
AT 86646	E	19930315	AT 89-122820	19891211
ES 2041956	T3	19931201	ES 89-122820	19891211
ZA 8909696	A	19900829	ZA 89-9696	19891218 <--
CA 2006009	AA	19900619	CA 89-2006009	19891219 <--
JP 04046985	A2	19920217	JP 90-155015	19900612
NO 9102338	A	19910617	NO 91-2338	19910617
NO 171601	B	19921228		
RU 2044026	C1	19950920	RU 91-4895879	19910617
DK 9101176	A	19910813	DK 91-1176	19910618
DK 170979	B1	19960409		
US 5252554	A	19931012	US 92-825431	19920121 <--
NO 9203657	A	19910617	NO 92-3657	19920921
NO 172130	B	19930301		
PRIORITY APPLN. INFO.:			DE 88-3842703	19881219
			EP 89-122820	19891211
			WO 89-EP1513	19891211
			US 89-452988	19891219
			NO 91-2338	19910607
AB	The esters of monofunctional C4-12 alcs. and C12-16 aliph. satd. monocarboxylic acids are flowable and pumpable at 0-5.degree. and are useful alone in a mixt. with a max. of the same amt. of monocarboxylic acids as the oil phase, or most of the oil phase, of an inverted drilling mud for environmentally safe prodn. of oil and gas. The aq. phase of the emulsion contains emulsifiers.			

weighting agents, fluid loss additives, etc. The oil phase has a Brookfield (RVT) viscosity of .1toeq.50 mPa.s at 0-5.degree.. The emulsion may contain an alkali reserve of CaO and/or metal oxides, e.g., ZnO. The esters or ester mixts. are mainly straight chain and derived from plant oils, e.g., coconut oil, palm nut oil, and babassu oil.

□ TITLE: **Emulsifying composition and inverse water-in-oil emulsions containing it as fluids for drilling and well treatment**

L10 ANSWER 4 OF 10 CA COPYRIGHT 1999 ACS  
 ACCESSION NUMBER: 108:153390 CA  
 INVENTOR(S): Aurenge, Jacques  
 PATENT ASSIGNEE(S): Rhone-Poulenc Chimie de Base, Fr.  
 SOURCE: Eur. Pat. Appl., 15 pp.  
 CODEN: EPXODW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: French  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 245157	A1	19871111	EP 87-400974	19870428
R: DE, FR, GB, IT, NL				
FR 2598153	A1	19871106	FR 86-6452	19860505
FR 2598153	B1	19880916		
AU 8772427	A1	19871112	AU 87-72427	19870501 <--
DK 8702264	A	19871106	DK 87-2264	19870504
NO 8701840	A	19871106	NO 87-1840	19870504
BR 8702231	A	19880217	BR 87-2231	19870504
			FR 86-6452	19860505

PRIORITY APPLN. INFO.:

AB The title **emulsifier** is a reaction product of C8-30 fatty acids with a mixt. of amines consisting of 50-70 diethanolamine (I) and 30-50 wt.% polyamines  $X(CH_2)_2NH(CH_2CH_2NH)_n(CH_2)_2NH_2$  ( $X = OH, NH_2$ ; .gtoreq.50% of  $X$  is  $NH_2$ ;  $n$  .ltoreq.3) at an acid-amine mixt. mol ratio of 0.4-0.7:1. Typically, the fatty acid mixt. is a tall oil distillate, and the amine mixt. consists of I 50-70, aminoethylethanolamine (II) 10-15, triethylenetetramine (III) 18-26, and tetraethylenepentamine (IV) 2-8%. Amt. of the **emulsifier** added to the **drilling mud** is 10-50 g/L. Thus, a mixt. of tall oil distillate consisting of oleic acid 50-55, linoleic acid 30-40, palmitic acid 3-5, and linolenic acid 1-2% 2258, an amine mixt. consisting of I 59, II 14, III 20, and IV 7% 1810, and toluene 300 g was refluxed under atm. pressure for 15 h with temp. increasing from 150 to 230.degree.. H2O 573 g was sepd. as the H2O-toluene azeotrope. After cooling, the **emulsifier** (viscosity 400 mPa.s at 20.degree.) was recovered. The **emulsifier** 25 mL was added to a drilling fluid contg. CaCl2.2H2O 70 g, distd. H2O 283 mL, fuel oil 546 mL, Petrozil RF3 30 mL, Ca(OH)2 30 g, barite 286 g, and organophilic clay Bentone 34 10 g. After homogenization for 5-10 min, the 1000 L fluid was subjected to std. tests.

□ TITLE: Filtration control additives for emulsion drilling muds, their manufacture, their use in drilling muds, and method for drilling wells using these muds

L10 ANSWER 5 OF 10 CA COPYRIGHT 1999 ACS  
ACCESSION NUMBER: 107:179889 CA  
PATENT ASSIGNEE(S): Milchem, Inc., USA  
SOURCE: Neth. Appl.. 26 pp.  
CODEN: NAXKAN  
DOCUMENT TYPE: Patent  
LANGUAGE: Dutch  
FAMILY ACC. NUM. COUNT: 3  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
NL 8601841	A	19870616	NL 86-1841	19860714
US 4735732	A	19880405	US 85-798965	19851118 <--
NO 8602580	A	19870519	NO 86-2580	19860625
			US 85-798965	19851118

PRIORITY APPLN. INFO.:

AB The additives (i.e., pyrolyzed amine salts of humic acids) which are useful in oil-based or low-toxicity drilling muds, are prep'd. by finely milling the humic acid-contg. material, charging the milled material to, and mixing it with smaller amts. of a primary or secondary amine in a reactor under a controlled atm., and heating the reactor to 185.degree. to the decompn. temp. of the material to obtain a pyrolyzed product that has a thermal stability in an oil-based drilling mud of .gtoreq.230.degree.. These materials are useful in the prepn. of high-d. drilling muds with reduced filtration loss. An 80:20 oil/water invert emulsion (d. 1.4 kg/L), contg. 34 g additive/L. and contg. primary emulsifier (oxidized tall oil) 6.4 vol.%, alk. earth oxide 49 g/L, secondary emulsifier (polyamide-type) 1.7 vol.%, and organophilic clay 13 g/L (4.5 lb/bbl), and a no. 2 fuel oil phase and a water phase consisting of 30 wt.% CaCl2 soln., was homogenized for 30 min. The samples were hot-rolled at 200.degree. for 64 h before detg. the 30-mm filtration loss (API RP13B) at 150.degree. and 345.degree. kPa. Using pyrolyzed leonardite-octadecylamine derivs. (at a leonardite-amine ratio of 3:1), the filtration loss was 3.2 total (no free water). vs. 52 mL (for 20 min under high-temp. high-pressure conditions) for the unpyrolyzed amine salt.

**TITLE: Method and apparatus for manufacture of oil-based drilling muds**

L10 ANSWER 6 OF 10 CA COPYRIGHT 1999 ACS  
 ACCESSION NUMBER: 106:35886 CA  
 INVENTOR(S): Ripke, Klaus  
 PATENT ASSIGNEE(S): Ekato Industrieanlagen Verwaltungsgesellschaft m.b.H.  
 und Co., Fed. Rep. Ger.  
 SOURCE: Ger. Offen.. 10 pp.  
 CODEN: GWKKBX  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3514850	A1	19861106	DE 85-3514850	19850424
NO 8502946	A	19861027	NO 85-2946	19850724
NL 8502220	A	19861117	NL 85-2220	19850810
GB 2174012	A1	19861029	GB 85-26619	19851029 <--
GB 2174012	B2	19880217		

**PRIORITY APPLN. INFO.:**

AB Oil-based drilling muds are prep'd. by premixing oil, water, and emulsifiers in a 1st container and adding bentonite and BaSO<sub>4</sub> under high shear in a 2nd container. The vol. ratio of the 2nd to the 1st container is 0.05-0.1:1. The initial stirring velocity of the 2nd container is 8.16 m/s, with the diam. of the outlet pipe equal to .apprx.30% of the container diam. The mixing can include optional heating elements.

□ **TITLE:** Polymers for clay-based drilling fluid emulsions

L10 ANSWER 7 OF 10 CA COPYRIGHT 1999 ACS  
 ACCESSION NUMBER: 105:229614 CA  
 PATENT ASSIGNEE(S): Calgon Corp., USA  
 SOURCE: Jpn. Kokai Tokkyo Koho. 10 PP.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 61136509	A2	19860624	JP 85-259933	19851121
US 4652623	A	19870324	US 84-674215	19841123 <--
CA 1265297	A1	19900130	CA 85-495039	19851112 <--
EP 191980	A2	19860827	EP 85-308488	19851121
EP 191980	A3	19870819		
EP 191980	B1	19900509		
R: CH, DE, FR, GB, IT, LI, NL				
NO 8504676	A	19860526	NO 85-4676	19851122
NO 165548	B	19901119		
NO 165548	C	19910227		
AU 8550284	A1	19860529	AU 85-50284	19851122 <--
AU 576644	B2	19880901		
US 4726906	A	19880223	US 86-937847	19861204 <--
NO 8904576	A	19860526	NO 89-4576	19891116
			US 84-674215	19841123
			NO 85-4676	19851122

PRIORITY APPLN. INPO.:

AB Additives for emulsified clay-contg. drilling fluids, for conditioning in filtration and improved rheol. characteristics, are copolymers made from unsatd. carboxylic (25-35) and sulfonic (25-40 wt.%) acids/salts and unsatd. cationic (5-10) and nonionic (15-45 wt.%) monomers and have specific viscosity 1.5-5.0 dL/g in aq. 1.0 N NaCl. A mixt. contg. acrylic acid 30, 2-acrylamido-2-methylpropanesulfonic acid 30, acrylamide 30, diallyldimethylammonium chloride 5, and methacryloyloxyethyltrimethylammonium chloride 5 wt. parts was polymd. 38 min with a catalyst contg. 0.16 wt. parts Na persulfate and 0.04 wt. % Na metabisulfite at max. temp. 83.degree.. The product copolymer 1.0 g was mixed into a drilling mud contg. water 350 mL, bentonite 14 g, filler 30 g, gypsum 4 g, NaOH 0.75 g, and lignosulfonate 3.0 g. The mixt. was aged 16 h at 162.degree., cooled, and tested. The plastic viscosity, yield point, gel strength, and mud loss when filter pressed were 7 cp, 3 lb/100 ft2, 0 (initial) and 2 (10 min), and 9.8 kg/cm2 (at 100 psi). resp.

□ TITLE: Metal compound of acid group-containing condensation products of ketones and aldehydes

L10 ANSWER 8 OF 10 CA COPYRIGHT 1999 ACS  
 ACCESSION NUMBER: 104:191931 CA  
 INVENTOR(S): Plank, Johann; Aignesberger, Alois  
 PATENT ASSIGNEE(S): SKW Trostberg A.-G., Fed. Rep. Ger.  
 SOURCE: Ger. Offen., 80 pp.  
 CODEN: GWXXBX  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3429068	A1	19860220	DE 84-3429068	19840807
EP 176673	A1	19860409	EP 85-108531	19850709
EP 176673	B1	19890301		
R: AT, BE, CH, DE, FR, GB, IT, LI, NL, SE				
AT 41018	B	19890315	AT 85-108531	19850709
AU 8545049	A1	19860213	AU 85-45049	19850716 <--
AU 570333	B2	19880310		
CA 1249991	A1	19890214	CA 85-487177	19850719 <--
ZA 8505517	A	19860326	ZA 85-5517	19850722 <--
US 4666979	A	19870519	US 85-762129	19850802 <--
DD 239598	AS	19861001	DD 85-279374	19850805
FI 8503018	A	19860208	FI 85-3018	19850806
FI 84611	B	19910913		
FI 84611	C	19911227		
DK 8503574	A	19860208	DK 85-3574	19850806
NO 8503102	A	19860210	NO 85-3102	19850806
NO 163740	B	19900402		
NO 163740	C	19900711		
ES 545938	A1	19860616	ES 85-545938	19850806
PRIORITY APPLN. INFO.:			DE 84-3429068	19840807
			EP 85-108531	19850709

AB The compds. are prepd. by conversion of acid group-contg. ketone-aldehyde condensation products with uni- or multivalent metal compds. and/or complexes of IIIA-VIIIA and/or IB-VB. The condensation products may be cocondensates of ketones and aldehydes with acid group-contg. compds. and with aminoplast-forming and/or arom. compds. and/or their condensation products and/or lignosulfonate resins and/or cellulose derivs. The metal compds. are used as thickeners, retention agents, surfactants, emulsifiers, dispersants, and/or plasticizers, esp. for water-contg. systems (e.g., in concrete manuf. and in drilling solns.). Thus, water 432, Na sulfite 189, and acetone 165 wt. parts were mixed and heated to 56.degree.; as soon as acetone reflux was established, 30% HCHO soln. 900 wt. parts was added with the 1st 1% added slowly for a controlled strong exothermic reaction and then the remainder added, followed by thermal post-treatment at 95.degree. for 30 min to give a hot resin soln. contg. 30% solids and with pH 12; 40% FeSO<sub>4</sub>·7H<sub>2</sub>O aq. soln. 283 wt. parts was added to the resin soln. (representing a 4.5% Fe addn.) and heated 2 h to boiling to give a metal compd. soln. contg. 27% solids with room temp. Brookfield viscosity 270 mPa-s. The product had dispersant properties and was useful, e.g., for viscosity redn. in cement slurries

for concrete, mortar, and drilling muds.

□ **TITLE:** Drilling fluid in the form of a water-in-oil emulsion

L10 ANSWER 9 OF 10 CA COPYRIGHT 1999 ACS  
ACCESSION NUMBER: 88:39655 CA  
PATENT ASSIGNEE(S): Halliburton Co.. USA  
SOURCE: Ger. Offen., 15 pp. Division of Ger. Offen. 2,420,900.  
CODEN: GWXXBX  
DOCUMENT TYPE: Patent  
LANGUAGE: German  
FAMILY ACC. NUM. COUNT: 6  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2462436	B2	19780921	DE 74-2462436	19740430
DE 2462436	C3	19790517		
CA 1023239	A1	19771227	CA 74-198081	19740423 <--
IT 1010089	A	19770110	IT 74-21900	19740424
NL 7405570	A	19741105	NL 74-5570	19740425
FR 2227897	A1	19741129	FR 74-15093	19740430
GB 1467841	A	19770323	GB 74-18905	19740430 <--
NO 7903203	A	19741104	NO 79-3203	19791005
			US 73-356239	19730501

**PRIORITY APPLN. INFO.:**

AB Water-in-oil emulsions contained lime 50-90, oleic amide (I) [301-02-01] 1-20, oleic acid dimer [7049-68-5] 2-20 wt. %, based on emulsifier (II), where II was composed of pulverized lime 61.6, I 3.9, undistd. oleic acid (III) [112-80-1] 5.1, tech. III (recovered from olein) 5.1, undistd. III dimer 10.3, dispersant 2.0 and asphaltic resin 12.0 wt. %. The dispersant was a mixt. of I with sulfite waste liquor from cellulose. Thus, a drilling fluid with d. 1.02 and oil-water ratio 60:40 contained BaSO<sub>4</sub> 102.1 kg, diesel oil no. 1 9.110 L, aq. CaCl<sub>2</sub> (1.20 kg/L) 6.041 L/15,900 L and 71.3 g emulsifier/L oil.

**TITLE:** **Emulsifiers containing reaction products of at least one basic compound with a wood tar, wood tar mixture or wood tar fraction**

U10 ANSWER 10 OF 10 CA COPYRIGHT 1999 ACS

ACCESSION NUMBER: 74:23773 CA

INVENTOR(S): Ricard, Guy

PATENT ASSIGNEE(S): Carbonisation et Charbons Actifs C.E.C.A.

SOURCE: Ger. Offen., 27 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2010131	A	19701008	DE 70-2010131	19700304
FR 2034267	A5	19701211	FR 69-6117	19690305
FR 2054494	A6	19710423	FR 69-24223	19690716
FR 2054494	B2	19740614		
ES 377439	A1	19721216	ES 70-377439	19700303
GB 1292071	A	19721011	GB 70-1292071	19700304 <--
NL 7003188	A	19700908	NL 70-3188	19700305
PRIORITY APPLN. INFO.:			FR 69-6117	19690305
			FR 69-24223	19690716

AB The emulsifiers, which are esp. suitable for prepn. of "reverse" H2O-in-oil emulsions for drilling muds are made from basic compds. from wood tars. Thus, a 50% aq. soln. of the H2O-sol. fraction of the products of destructive distn. of softwoods was treated with 1 part by wt. of oleic acid and 1 part by wt. CaO to 3 parts tar. These were kneaded at 100.degree. until nearly complete vaporization of the H2O occurred, cooled, and ground. This was investigated as an additive [at 60-80 g/l. liq. phase of 2 parts by vol. heating oil per part by vol. H2O or sol] both without heating and after heating for 24 hr at 200.degree.. The filtrations were carried out at 200.degree. at a pressure difference of 35 bars. In contrast to other deep-drilling flushings, these are less sensitive to agitation. When crude tar was used instead of the H2O-sol. fraction, the results were much better. A phosphatide may be used instead of a fatty acid. A loading filler, such as BaSO4, may be used to prevent settling of the filler, with a suitable suspending agent, such as a hydrophobic and oleophilic, non-gelled clay to which fibrous asbestos (1-2 mm fibers) may be added. The clay may be rendered hydrophobic by impregnating with an insol. salt of a long-chain fatty acid. An emulsifier prepd. with a mixt. of 70 parts oleic acid and 30 parts tertiary amine, which contained 2-5 moles condensed ethylene oxide, instead of 100 parts fatty acid, had better stability at high temps. and to higher concns. of electrolytes and greater tolerance to clay fillers.

☐ **TITLE: A SOLID EMULSIFIER USED TO IMPROVE THE PERFORMANCE OF OIL-IN-WATER DRILLING FLUIDS**

L16 ANSWER 44 OF 62 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 97:8825 TULSA

DOCUMENT NUMBER: 648659

AUTHOR: YAN, J; WANG, F; JIANG, G; FAN, W; SU, C

CORPORATE SOURCE: PETROLEUM UNIV, CHINA: SHENGLI PETROL ADMIN BUR

SOURCE: SPE OILFIELD CHEM INT SYMP (HOUSTON, 2/18-21/97) PROC PP 561-569, 1997 (SPE-37267; 4 REFS). : Conference: Conference Article

LANGUAGE: English

AB The oil-in-water emulsion drilling fluids, prepared by adding 5 to 12% mineral oil (or diesel) to water-based muds, have been widely used for stuck-pipe prevention in Shengli oil field. In some cases, the emulsion stability of this kind of mud system is not strong enough to meet the requirements of drilling operations. To overcome this drawback, a solid emulsifier, which is characterized by its small particle size and special wetting behavior (slightly water-wet) has been developed. A study dealing with the influence of various kinds of finely divided insoluble solid particles on the emulsification of oil and water was carried out. The substances used include bentonite, organophilic clay, kaolinite, barite, 2 kinds of calcium carbonate with different particle size, 2 kinds of silica with different wetting behavior, and the new solid emulsifying agent. Both emulsion stability experiments and drop coalescence experiments were performed.

☐ **TITLE: (R) EMULSIFYING AGENT, REVERSE EMULSIONS PRODUCED USING THIS EMULSIFYING AGENT AND USE OF THESE EMULSIONS IN DRILLING WELLS**

L16 ANSWER 46 OF 62 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 93:22787 TULSA

DOCUMENT NUMBER: 563200

CROSS REFERENCE: 513884

INVENTOR: BINON, J P

PATENT ASSIGNEE: CIE FRANCAISE PETROLES

PATENT INFO.: US 5242899 19930907

APPLN. INFO.: US 19920127

PRIORITY INFO.: FR 89-8911601 19890905

PRIORITY INFO.: US 90-577701 19900905

SOURCE: US 5,242,899, C 9/7/93, F 1/27/92, PR FR 9/5/89 (APPL 8,911,601) AND US 9/5/90 (APPL 577,701) (C09K-007/02) (20

PP; 6 CLAIMS) SRPA# 513,884. : Patent

LANGUAGE: English

AB (For abstract, see Abstract #513,884)

□ **TITLE: USE OF SURFACE-ACTIVE CARBOXYLIC ACID  
COMPLEX ESTERS AS EMULSIFIERS IN OIL-BASED DRILLING  
MUDS AND OTHER BOREHOLE TREATMENT AGENTS**

L16 ANSWER 47 OF 62 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 93:6220 TULSA

DOCUMENT NUMBER: 546633

INVENTOR: MUELLER, H; KNOERR, W; HEROLD, C P

PATENT ASSIGNEE: HENKEL KG AUF AKTIEN

PATENT INFO.: WO 9213926 19920820

APPLN. INFO.: WO 19920122

PRIORITY INFO.: DE 91-4102908 19910131

SOURCE: WORLD 92/13.926, P 8/20/92, F 1/22/92, PR GER 1/31/91 (APPL

4,102,908) (C09K-007/06; C09K-007/02; B01F-017/00) PCI GAZ

NO 22, P 9273, 8/20/92 (ISSN 02507757; ABSTRACT ONLY) (AO).

: Patent

LANGUAGE: English

AB The description relates to the use of complex esters from the reaction of (a) di and/or tricarboxylic acids or their derivatives capable of ester formation; with (b) polyvalent alcohols with up to 6 and preferably with up to 4 OH groups and/or their oligomers; and (c) monocarboxylic acids. which have an initial molar ratio b/a somewhat corresponding to the number of carboxyl groups per mol of reactant (a), are largely free of unreacted carboxyl groups but may have residual free OH groups, as ecologically acceptable emulsifiers of the W/O type in fluid and pumpable drilling muds or other borehole treatment agents which have a dispersed aqueous and/or water miscible alcoholic phase in a closed oil phase and are suitable for the environmentally friendly opening of deposits, e.g., of petroleum or natural gas. The emulsifiers relate to invert drilling muds which are suitable for the environmentally friendly opening of geological deposits and contain, in a closed oil phase, a dispersed aqueous and/or water miscible alcoholic phase together with emulsifiers and other customary auxiliaries, e.g., thickening agents, fluid-loss additives. (Original patent not available from I.U.)

☐ **TITLE: (R) EMULSIFIERS FOR OIL BASED DRILLING  
FLUIDS**

L16 ANSWER 48 OF 62 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 90:15092 TULSA

DOCUMENT NUMBER: 489429

CROSS REFERENCE: 485303

INVENTOR: COATES, J A; FARRAR, J M; GRAHAM, M H

PATENT ASSIGNEE: SANDOZ AG

PATENT INFO.: EP 374229 19900627

APPLN. INFO.: EP 19890512

PRIORITY INFO.: GB 88-8811574 19880516

SOURCE: EUROPE 374.229, P 6/27/90, F 5/12/89, PR GR BRIT 5/16/88

(APPL 8.811.574) (C09K-007/06; B01F-017/00) EUROPE PAT BULL  
V 1990, NO 26, P 108, 6/27/90 (ISSN 01709305; ABSTRACT

ONLY) (AO) SRPA# 485.303. ; Patent

LANGUAGE: English

AB (For abstract and indexing, see Abstract #485.303)

☐ **TITLE: EMULSIFIERS FOR OIL BASED DRILLING  
FLUIDS**

L16 ANSWER 49 OF 62 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 90:10966 TULSA

DOCUMENT NUMBER: 485303

INVENTOR: COATS, J A; FARRAR, J M; GRAHAM, M H

PATENT ASSIGNEE: SANDOZ PATENT GMBH; SANDOZ AG

PATENT INFO.: WO 8911516 19891130

APPLN. INFO.: WO 19880512

PRIORITY INFO.: GB 88-8811574 19880516

SOURCE: WORLD 89/11,516, P 11/30/89, F 5/12/88, PR GR BRIT 5/16/88

(APPL 8.811,574) (C09K-007/06; B01F-017/00) PCT GAZ V 1989,  
NO 28, P 7185, 11/30/89 (ISSN 02507757; ABSTRACT ONLY)

(AO). ; Patent

LANGUAGE: English

☐ **TITLE: (R) EMULSIFYING AGENT FOR OIL BASED  
DRILLING FLUIDS**

L16 ANSWER 50 OF 62 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 88:8170 TULSA

DOCUMENT NUMBER: 438597

CROSS REFERENCE: 400866

INVENTOR: PATEL, A D

PATENT ASSIGNEE: DRESSER INDUSTRIES INC

PATENT INFO.: CA 1232610 19880209

APPLN. INFO.: CA 19840904

PRIORITY INFO.: US 83-552641 19831117

SOURCE: CAN 1,232,610, C 2/9/88, F 9/4/84, PR US 11/17/83 (APPL  
552,641) (15 PP; 7 CLAIMS) SRPA# 400.866. ; Patent

LANGUAGE: English

AB (For abstract and indexing, see Abstract #400.866)

**TITLE: ZWITERIONIC 2-ALKYL IMIDAZOLINES AS EMULSIFYING AGENTS FOR OIL BASED DRILLING FLUIDS**

L16 ANSWER 52 OF 62 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 86:7372 TULSA

DOCUMENT NUMBER: 400866

INVENTOR: PATEL. A D

PATENT INFO.: US 4544756 19851001

APPLN. INFO.: US 83-552641 19831117

SOURCE: US 4,544,756, C 10/1/85. F 11/17/83 (APPL 552,641) (DRESSER INDUSTRIES INC) (7 CLAIMS, 4 PP). : Patent

LANGUAGE: English

AB **Emulsifying agents for oil-based drilling fluids** are described that not only are good emulsifiers for oil based drilling fluids, but also are wetting agents and fluid loss control agents in invert (water-in-oil) systems. The agents are obtained from imidazolines prepared by (1) reacting long chain fatty acids with polyalkylene polyamines to form a 2-alkyl imidazoline and (2) then reacting the 2-alkyl imidazoline with an activated dicarboxylic acid to form the desired 2-alkyl imidazoline derivative. (7 claims, 4 pp)

**TITLE: EMULSIFIER AND INVERT EMULSION DRILLING FLUIDS CONTAINING IT**

L16 ANSWER 53 OF 62 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 86:1093 TULSA

DOCUMENT NUMBER: 394587

INVENTOR: CLAPPER, D K; PERRICONE, A C; SALISBURY, D P

PATENT INFO.: GB 2158437 A 19851113

APPLN. INFO.: GB 19850510

PRIORITY INFO.: US 84-609025 19840510

SOURCE: GR BRIT 2,158,437A, P 11/13/85. F 5/10/85. PR US 5/10/84 (APPL 609,025) (MILCHEM INC) (11 CLAIMS, 19 PP). : Patent

LANGUAGE: English

AB **An emulsifier useful in a water-in-oil emulsion drilling fluid** comprises an oligamide reaction product of a tricarboxylic acid with a diamide formed from a polyamine and a C6-20 fatty acid. The surfactant has an acid value of 26 to 46 and an amine value from 10 to 30. The diamide is prepared by reacting 30 to 70 mole % of fatty acid (e.g., stearic or oleic acids or tall oil) with 15 to 35 mole % polyamine (e.g., diethylenetriamine), i.e., a molar ratio of approx. 2:1, and reacting the diamide(s) produced with 15 to 35 mole % (i.e., an approx. equimolar amount to the polyamine) of the bicarboxylic acid (e.g., citric acid). (11 claims, 19 pp)

☐ **TITLE: NEW EMULSIFIERS ARE FINDING USE IN OIL-BASED MUDS**

L16 ANSWER 54 OF 62 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 84:19151 TULSA

DOCUMENT NUMBER: 369882

AUTHOR: CLAPPER, D K; SALISBURY, D

CORPORATE SOURCE: MILCHEM INC

SOURCE: WORLD OIL V 199, NO 6, PP 125, 128, 132, 143, 145, NOV 1984

(ISSN 00438790). ; Journal

LANGUAGE: English

AB Wells are deeper and more complicated, placing new performance demands on emulsifiers for oil-based mud systems. Introduction of various mineral oils as an environmentally acceptable alternative to diesel oil has further complicated the way emulsifiers function. Changes in the solvent system and chemical structure of emulsifiers have been required to provide optimum performance while still maintaining reasonable treatment levels. This article focuses on the chemistry and performance of some of the emulsifiers formulated for low-toxicity oil systems, and brings to light many important aspects of primary and secondary emulsifiers for both diesel and low-toxicity oil mud systems. Topics discussed include pertinent oil mud background, emulsifier chemistry, performance evaluation, and field testing results. (20 refs.)

☐ **TITLE: SILICONE EMULSIFIER COMPOSITION, INVERT EMULSIONS THEREFROM AND METHOD THEREFOR**

L16 ANSWER 55 OF 62 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 84:160 TULSA

DOCUMENT NUMBER: 350891

INVENTOR: DONATELLI, P A; KEIL, J W

PATENT INFO.: GB 2113236 A 19830803

APPLN. INFO.: GB 19821216

PRIORITY INFO.: US 81-336153 19811231

SOURCE: GR BRIT 2,113,236A, D 8/3/83, F 12/16/82, PR US 12/31/81

(APPL 336,153) (DOW CORNING CORP) (4 CLAIMS). ; Patent

LANGUAGE: English

AB A silicone emulsifier composition is described which is useful for preparing thermally stable, solids-free invert emulsions for the deep well drilling. It comprises a surface active polydiorganosiloxane bearing one or more polyoxyalkylene radical(s) and one or more hydrocarbon radical(s) having from 6 to 18 carbon atoms and a resin component comprising siloxane units. The invert emulsions and a method for their preparation are described. The invert emulsions can be prepared to contain a brine discontinuous phase and a liquid hydrocarbon continuous phase. (4 claims)

☐ **TITLE: (R) AN ANALYTICAL METHOD FOR EMULSIFIER CONCENTRATION IN AN OIL-BASE DRILLING FLUID**

L16 ANSWER 56 OF 62 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 82:7872 TULSA

DOCUMENT NUMBER: 317860

CROSS REFERENCE: 286910

AUTHOR: MATHERLY, R

SOURCE: J PETROL TECHNOL v 33, NO 8, PP 1389-1393, AUG 1981 (ISSN 01492136) SRLA# 286.910. ; Journal

LANGUAGE: English

☐ **TITLE: EMULSIFIER COMPOSITIONS AND EMULSIONS CONTAINING THE SAME**

L16 ANSWER 58 OF 62 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 71:12022 TULSA

DOCUMENT NUMBER: 150436

INVENTOR: BLUESTEIN, B R; FOLSY, J T

PATENT INFO.: US 3590005 19710729

APPLN. INFO.: US

SOURCE: U S 3,590,005, C 7/29/71, F 3/6/68: WITCO CHEMICAL CORP. ;

Patent

LANGUAGE: English

☐ **TITLE: EMULSIFIER FOR EMULSIONS OF OIL-IN-WATER TYPE WITH APPLICATION FOR DRILLING SCOPE**

L16 ANSWER 59 OF 62 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 65:7181 TULSA

DOCUMENT NUMBER: 57181

PATENT INFO.: IN 89047 19650306

APPLN. INFO.: IN 19630722

SOURCE: INDIA 89.047, C 3/6/65, F 7/22/63, MINIST INDUSTIR PET CHIM.

; Patent

LANGUAGE: English

☐ **TITLE: EMULSIFIER FOR EMULSIONS OF THE WATER-IN-OIL TYPE FOR GREAT DEPTH DRILLING**

L16 ANSWER 60 OF 62 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 65:7180 TULSA

DOCUMENT NUMBER: 57180

PATENT INFO.: IN 89045 19650306

APPLN. INFO.: IN 19630722

SOURCE: INDIA 89.045, C 3/6/65, F 7/22/63, MINIST INDUSTIR PET CHIM.

; Patent

LANGUAGE: English

☐ **TITLE: (R) ESTERS OF CARBOXYLIC ACIDS OF MEDIUM CHAIN- LENGTH AS A COMPONENT OF THE OIL PHASE IN INVERT DRILLING MUDS**

L21 ANSWER 44 OF 73 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 95:17342 TULSA

DOCUMENT NUMBER: 605250

CROSS REFERENCE: 500399

INVENTOR: MUELLER, H; HEROLD, C P; VON TAPAVICZA, S; NEUSS, M;

ZOELLNER, W; BURBACH, F

PATENT ASSIGNEE: HENKEL KG AUF AKTIEN

PATENT INFO.: US 5403822 19950404

APPLN. INFO.: US 19930527

PRIORITY INFO.: DE 89-3907392 19890308

PRIORITY INFO.: US 90-752692 19900301

SOURCE: US 5.403.822, C 4/4/95, F 5/27/93, PR GER 3/8/89 (APPL 3,907.392) AND US 3/1/90 (APPL 752,692) (C09K-007/02: C09K-007/06) (9 PP; 30 CLAIMS) SRPA# 500.399. ; Patent

LANGUAGE: English

AB (For abstract. see Abstract #500,399)

☐ **TITLE: (R) INVERT EMULSION DRILLING MUD**

L21 ANSWER 45 OF 73 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 96:4780 TULSA

DOCUMENT NUMBER: 618105

CROSS REFERENCE: 607332

INVENTOR: FLEMING, J R; FLEMING, H C

PATENT ASSIGNEE: J K F INVESTMENTS LTD; HOUR HOLDINGS LTD

PATENT INFO.: CA 2101884 19950516

APPLN. INFO.: CA 93-2101884 19930804

SOURCE: CAN 2.101.884, C 5/16/95, F 8/4/93 (APPL 2.101.884)

(C09K-007/02) (23 PP; 18 CLAIMS) SRPA# 607.332. ; Patent

LANGUAGE: English

AB (For abstract. see Abstract #607.332)

**TITLE: FORMATION DAMAGE AND FLUID LOSS IN  
CROSSFLOW FILTRATION OF DRILLING MUDS**

L21 ANSWER 46 OF 73 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 95:7937 TULSA

DOCUMENT NUMBER: 595845

AUTHOR: DI. J

CORPORATE SOURCE: TEXAS UNIV. AUSTIN

SOURCE: PHD THESIS, 1993; DISS ABSTR INT. SECT B V 54. NO 12. PT 1.

PP 6431-B - 6432-B, JUNE 1994 (ISSN 04194217: ORDER NO

DA9413508: 199 PP; ABSTRACT ONLY) (AO). : Dissertation

LANGUAGE: English

AB A systematic study of the formation damage and filtrate loss associated with the dynamic filtration of water- and oil-based muds is presented. Experiments were conducted in a specially designed core holder to measure the permeability impairment and changes in resistivity as drilling mud is circulated past the face of a core. Four sections of the core were monitored to measure the depth of damage. The fluid loss rate as well as the return permeabilities were also measured. Seven kinds of water-based muds and 4 kinds of oil-based muds were used in the experiments. The experimental results show that the depth of invaded mud particles is strongly dependent on the mud composition. Oil-based mud cakes consist primarily of water droplets stabilized by colloidal particles and emulsifiers. These mud cakes are not as shear resistant as water-based mud cakes. The use of water-wet solids results in very poor quality external cakes and high fluid loss rates. There exists a critical overbalance drilling pressure below which no filter cake will be formed on the formation face. The rheological properties of the mud (flow index  $n$  and consistency constant  $c$  in a power law fluid) have a significant effect on cake formation. (Longer abstract available) (Original article not available from I.U.)

**TITLE: ALTERATION OF RESERVOIR ROCK WETTABILITY  
AND ITS FLOW PROPERTIES CAUSED BY OIL-BASED AND  
WATER-BASED DRILLING MUDS**

L21 ANSWER 48 OF 73 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 94:7660 TULSA

DOCUMENT NUMBER: 571538

AUTHOR: SANNER, D O; AZAR, J J

CORPORATE SOURCE: PHILLIPS PETROL CO NORWAY; TULSA UNIV

SOURCE: SPE FORMATION DAMAGE CONTR INT SYMP (LAFAYETTE, LA,  
2/9-10/94) PROC PP 171-180. 1994 (SPE-27354; 28 REFS). :  
Conference: Conference Article

LANGUAGE: English

AB A core study is conducted to investigate the return permeability and changes in the irreducible water saturation in sandstone and carbonate cores when exposed to filtrate from actual oil-based and water-based drilling mud. Results indicate that the oil-based filtrate contains sufficient oil wetting surfactants and emulsifiers to reverse the wettability of rock surfaces from water-wet to oil-wet. The oil-wet rock surface in the low permeability matrix reduced the effective oil permeability drastically. In the high permeability matrix, the change in wettability to an oil-wet system reduced the irreducible water saturation, resulting in an increase in the effective oil permeability. This effect was observed for sandstone as well as the carbonate cores. Clay swelling, dispersion and ion exchange combined with water blockage are believed to control the changes in flow properties for the sandstone core samples. The introduction of colloidal particles and the dissolving of calcite are believed to be the mechanisms controlling the changes observed in the flow properties for the carbonate cores.

□ **TITLE: OPTIMIZATION OF OIL-BASE MUD CHEMISTRY FOR CEMENTING**

L21 ANSWER 51 OF 73 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 93:8265 TULSA

DOCUMENT NUMBER: 548678

AUTHOR: HARDER, C A; CARPENTER, R B; FREEMAN, E R; GANDY, R G;  
BROOKEY, T E

CORPORATE SOURCE: ARCO OIL & GAS CO; ARCO E&P TECHNOLOGY; BJ SERVICES

SOURCE: SPE OILFIELD CHEM INT SYMP (NEW ORLEANS, 3/2-5/93) PROC PP  
329-338. 1993 (SPE-25183; 13 REFS). ; Conference:  
Conference Article

LANGUAGE: English

AB Oil base muds (OBM) and their formulation can have a pronounced impact on cement performance in well bores. This occurs when cement and OBM become mixed during normal well cementing operations. Increased mud contamination can ultimately compromise cement integrity. To minimize these mixing effects, the ability to improve compatibility of the mud system becomes paramount to completion success. The OBM base oil and the type and concentration of emulsifier can be especially crucial. Proper design and management of an OBM system provides better cement performance. Although using an alkanolamide as the primary emulsifier costs slightly more than using a fatty acid, reducing the impact of OBM/cement contamination can more than offset the increased cost.

**TITLE: INVERT DRILLING MUDS**

L21 ANSWER 56 OF 73 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 91:6000 TULSA

DOCUMENT NUMBER: 500399

INVENTOR: MUELLER, H; HEROLD, C P; VON TAPAVICZA, S; NEUSS, M;

ZOELLNER, W; BURBACH, F

PATENT ASSIGNEE: HENKEL KG AUF AKTIEN

PATENT INFO.: WO 9010681 19900920

APPLN. INFO.: WO 19900301

PRIORITY INFO.: DE 89-3907392 19890308

SOURCE: WORLD 90/10,681, P 9/20/90, F 3/1/90, PR GER 3/8/89 (APPL

3,907,392) (C09K-007/05) PCT GAZ V 1990, NO 22, P 6732,

9/20/90 (ISSN 02507757: ABSTRACT ONLY) (AO). ; Patent

LANGUAGE: English

AB The use of esters is described, which are fluid at room temperature and have flashpoints above 80(deg)C, selected from monocarboxylic acids of synthetic and/or natural origin with 6 to 11 C atoms and monofunctional and/or multifunctional alcohols as the oil phase or a component thereof in invert drilling muds, which are suitable for the environmentally favorable extraction of petroleum or natural gas deposits. In a closed oil phase, they contain a dispersed aqueous phase together with emulsifiers, fillers, fluid loss additives and, if desired, other customary additives. In another version, invert drilling muds of the aforementioned kind are described, in which the oil phase contains esters of monocarboxylic acids of synthetic and/or natural origin with 6 to 11 C atoms and with monofunctional and/or multifunctional alcohols mixed, if desired, with other components from the class of ecologically acceptable compounds. (Original patent not available from T.U.)

□ **TITLE: ELECTRICAL STABILITY AND OIL-WETNESS OF OIL-BASED MUDS**

L21 ANSWER 57 OF 73 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 90:19412 TULSA

DOCUMENT NUMBER: 493749

AUTHOR: GROWCOCK, F B; SCHMIDT, D D; ELLIS, C F; AZAR, J J

CORPORATE SOURCE: AMOCO PRODUCTION CO: CHEVRON USA INC: TULSA UNIV

SOURCE: 65TH ANNU SPE TECH CONF (NEW ORLEANS. 9/23-26/90) PROC (D - DRILLING) PP 335-348, 1990 (SPE-20435: 17 REFS). : Conference: Conference Article

LANGUAGE: English

AB It is shown that the electrical breakdown induced during electrical stability (ES) tests of oil-based muds involves formation of a conductive bridge in the mud between the electrodes. Observations with an optical microscope demonstrates that this bridge is composed of aqueous fluid and particulate solids. Water is the key component, whereas the solids appear to be involved only as carriers of the water. Hematite is an exception since it, like water, can serve as a conductor. The absence of visible chemical changes during ES tests supports the contention that the rapid rise in the current is a conduction phenomenon, rather than true dielectric breakdown of the base oil. The oil-wet state of an invert emulsion mud can be determined, along with its emulsion stability, by systematically contaminating the mud with inert solids (barite is recommended) and emulsifier and analyzing the resulting ES trends.

□ **TITLE: (R) DRILLING MUD COMPOSITIONS CONTAINING HIGH MOLECULAR WEIGHT POLY(VINYLAMINES)**

L21 ANSWER 58 OF 73 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 89:9162 TULSA

DOCUMENT NUMBER: 461425

CROSS REFERENCE: 459153

INVENTOR: LAI, T W; VIJAYENDRAN, B R

PATENT ASSIGNEE: AIR PRODUCTS & CHEM INC

PATENT INFO.: US 4804793 19890214

APPLN. INFO.: US 19880304

PRIORITY INFO.: US 86-914046 19861001

SOURCE: US 4,804,793. C 2/14/89. F 3/4/88, PR US 10/1/86 (APPL 914,046) (6 PP: 14 CLAIMS) SRPA# 459,153. : Patent

LANGUAGE: English

**TITLE: DRILLING MUD COMPOSITIONS CONTAINING HIGH MOLECULAR WEIGHT POLY(VINYLAMINES)**

L21 ANSWER 59 OF 73 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 89:21104 TULSA

DOCUMENT NUMBER: 473367

INVENTOR: LAI, T W; VIJAYENDRAN, B R

PATENT ASSIGNEE: AIR PRODUCTS & CHEM INC

PATENT INFO.: EP 331046 19890906

APPLN. INFO.: EP 19890224

PRIORITY INFO.: US 88-164356 19880304

SOURCE: EUROPE 331.046. P 9/6/89. F 2/24/89. PR US 3/4/88 (APPL

164,356) (C09K-007/02) (10 PP; 14 CLAIMS). ; Patent

LANGUAGE: English

AB High molecular weight poly(N-vinylamides) are prepared by an inverse emulsion polymerization process. The reaction provides an inverse homopolymer emulsion consisting essentially of 10 to 70% by wt of an aqueous solution containing 10 to 90% by wt of a homopolymer of an N-vinylamide. The vinylamide homopolymer emulsions are used in the preparation of vinylamine homopolymers of at least a 106 average molecular weight by acid or base catalyzed hydrolysis of the homopolymer, preferably as the emulsion. The use of the mineral acid in the hydrolysis step or in acidifying the base hydrolysis product provides the poly(vinylamine) as the salt of such acid. The high molecular weight derived poly(vinylamines) have application in oil field drilling mud compositions. Solution rheology (thickening efficiency and viscosity response to shear rates in the range of 1 to 1,000 sec<sup>-1</sup>) of the poly(vinylamines) at a 0.5 to 1% concentration in low level salt solutions, e.g., 2% KCl solution, is important in oil field chemical compositions for many applications. The high molecular weight of the polymers enhances viscosifying and rheological properties.

**TITLE: TAKING A CLOSE LOOK AT OIL BASE MUDS**

L21 ANSWER 60 OF 73 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 89:11460 TULSA

DOCUMENT NUMBER: 463723

AUTHOR: FOX, C

SOURCE: OFFSHORE ENG PP 32-33, FEB 1989 (ISSN 0305876X). ; Journal

LANGUAGE: English

AB Oil base muds are the drilling fluids of choice throughout much of the North Sea. Low toxicity mineral oils have replaced diesel oil for environmental reasons as the base fluid. Recently, tight restrictions have been proposed to limit the amount of oil retained on cuttings discharged into the sea. Mud composition affects the amount of oil retained on cuttings. A systematic study of how the physical properties and chemical constituents of low toxicity oil muds impact cuttings oil retention is reported. Variables studied included rheology, gel strength, oil-water ratio, base oil type, organophilic clay concentration, emulsifier and wetting agent type and concentration, and cuttings mineralogy. Research results are tabulated.

☐ **TITLE: THE MECHANISM OF WETTABILITY ALTERATION DUE TO SURFACTANTS IN OIL-BASED MUDS**

L21 ANSWER 61 OF 73 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 89:2950 TULSA

DOCUMENT NUMBER: 455213

AUTHOR: MENEZES, J L; YAN, J; SHARMA, M M

CORPORATE SOURCE: SHELL OFFSHORE CO; TEXAS UNIV

SOURCE: SPE OILFIELD CHEM INT SYMP (HOUSTON, 2/8-10/89) PROC PP 17-32, 1989 (SPE-18460; 42 REFS). : Conference: Conference Article

LANGUAGE: English

AB The mechanism for the alteration of sandstone wettability due interaction with oil-based mud components such as cationic and anionic surfactants is investigated. Extensive use of such surfactants is made in drilling muds and completion fluids. It is shown through contact angle and capillary pressure experiments, that oil-based mud components can in some cases drastically alter the original wettability conditions of both sandstone and carbonate rocks. The wettability alterations are caused mainly by surfactants in the drilling fluids.

☐ **TITLE: METHOD AND APPARATUS FOR PRODUCING OIL-BASED DRILLING MUD**

L21 ANSWER 63 OF 73 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 87:1280 TULSA

DOCUMENT NUMBER: 411881

INVENTOR: KIPKE, K

PATENT ASSIGNEE: EKATO INDUST VER GMBH & CO

PATENT INFO.: GB 2174012 A 19861029

APPLN. INFO.: GB 19851029

PRIORITY INFO.: DE 85-3514850 19850424

SOURCE: GR BRIT 2,174,012A. P 10/29/86. F 10/29/85, PR GER 4/24/85 (APPL 3,514,850) (4 PP; 10 CLAIMS). : Patent

LANGUAGE: English

AB A method is described for preparing oil-based drilling mud. Oil, water and emulsifiers are premixed in a first agitator tank, and the mixture is transferred to a second agitator tank in communication with the first. Here it is mixed with bentonite and barium sulfate (barite). The mixture in the second tank is stirred by means of disk agitators with a powerful shearing action sufficient to break down the bentonite. The mixture is circulated through the 2 agitator tanks by means of an impeller agitator. The second tank may be slightly heated, to accelerate the breaking down of the bentonite, by a heater accommodated in a partition.

**TITLE: DRILLING MUD VISCOSIFICATION AGENTS BASED ON SULFONATED IONOMERS**

L21 ANSWER 64 OF 73 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 84:15505 TULSA

DOCUMENT NUMBER: 366236

INVENTOR: LUNDBERG, R D; WALKER, T O; O'FARRELL, C P; MAKOWSKI, H S

PATENT INFO.: US 4447338 19840508

APPLN. INFO.: US 81-292235 19810812

SOURCE: US 4,447,338. C 5/8/84. F 8/12/81 (APPL 292,235) (EXXON RESEARCH & ENG CO) (10 CLAIMS). ; Patent

LANGUAGE: English

AB Sulfonated elastomer polymers are described which function as thickeners when added to oil-based drilling muds. The polymers have 5 to 30 me. of sulfonate groups per 100 gr of the sulfonated polymer, wherein the sulfonated group is neutralized with a metallic cation or an amine or ammonium counterion. A polar cosolvent can optionally be added to the mixture of oil base mud and sulfonated elastomeric polymer, wherein the polar cosolvent increases the solubility of the sulfonated elastomeric polymer in the mud by decreasing the strong ionic interactions between the sulfonate groups of the sulfonated elastomeric polymer. (10 claims)

**TITLE: THE DEVELOPMENT AND APPLICATION OF OIL-BASE MUDS**

L21 ANSWER 66 OF 73 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 85:246 TULSA

DOCUMENT NUMBER: 371425

AUTHOR: BROWNSON, G; PEDEN, J M

CORPORATE SOURCE: HERIOT WATT UNIV

SOURCE: CHEMICALS IN THE OIL INDUSTRY (BOOK: ISBN 0-85186-885-1) ROYAL SOC CHEM. LONDON; PP 22-41. 1983 (ROYAL SOC CHEM N W REG IND DIV SYMP (MANCHESTER, ENGL. 3/22-23/83) PROC). : Conference: Conference Article

LANGUAGE: English

AB Oil muds having oil as a continuous phase. stop surface water-adsorption by making them oil-wet. By maintaining higher salinity in the water phase (by adding calcium chloride), oil muds not only prevent osmotic migration of water but also can dehydrate shale by reverse osmotic migration. Thus, water-sensitive shales remain stable. The layer of emulsifier at the interface acts as a semi-permeable membrane, and, provided the vapor pressure of the aqueous phase is less than the vapor pressure of the formation water, transfer from the emulsion fluid to the shale will not occur. This frequently requires the aqueous vapor pressure of the drilling fluid to be less than that of a saturated sodium chloride solution and often it is desirable to saturate the aqueous phase of the drilling fluid with calcium chloride. (27 refs.)

☐ **TITLE: OIL-BASE MUD DESIGNED TO COMPETE WITH WATER-BASE MUD**

L21 ANSWER 67 OF 73 TULSA COPYRIGHT 1999 UTULSA  
ACCESSION NUMBER: 83:11406 TULSA  
DOCUMENT NUMBER: 342099  
AUTHOR: JEFFERSON, D T  
SOURCE: OIL GAS DIG V 6. NO 1. P 21. 5/15/83.  
LANGUAGE: English

AB Oil-base muds are gaining widespread oil field acceptance for drilling water-sensitive shales: deep, hot holes; and for protecting producing formations. However, traditional oil-base muds have 2 main disadvantages: a decreased rate of penetration, and a generally higher cost per barrel than comparably weighted water-based fluids. To solve those problems, Dowell Fluid Services recently introduced Greased Lightnin drilling fluid, and designed it to provide a drilling rate that at least equals and usually exceeds that of comparable water-base muds. The product is a fast drilling, invert emulsion oil mud. The new drilling fluid has been formulated to provide flexibility and stability over a wide range of down-hole and surface conditions, and has performed as expected in field tests and actual use.

☐ **TITLE: OIL-BASED MUDS MAY BE THE SOLUTION**

L21 ANSWER 69 OF 73 TULSA COPYRIGHT 1999 UTULSA  
ACCESSION NUMBER: 82:6456 TULSA  
DOCUMENT NUMBER: 316444  
SOURCE: PETROL NEWS V 12. NO 11, PP 44-45, FEB 1982.  
LANGUAGE: English

AB Where harsh drilling conditions exist, such as water absorbant or hydrating shale and high temperature, the use of invert emulsion, oil-based drilling fluids may become imperative as they are resistant to temperature, stable at great depths, and give virtually trouble-free drilling through the most difficult shale formations. An oil mud is defined as any fluid which uses oil as its continuous phase. Oil-based muds contain little water and are rarely used in the region. Invert emulsion, oil-based muds contain a higher percentage of water emulsified into the continuous oil phase. Borehole instability due to shale hydration constitutes the bulk of the hole problems in SE. Asia. In areas where this process transpires, several disastrous situations can occur: washouts causing hole enlargement, hole fill, and stuck pipe.

☐ **TITLE: KNOW YOUR DRILLING MUD COMPONENTS**

L21 ANSWER 70 OF 73 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 80:10493 TULSA

DOCUMENT NUMBER: 282017

SOURCE: DRILLING CONTRACT V 36, NO 3, PP 92-110 7 PP. MARCH 1980  
(ISSN 00460702). ; Journal

LANGUAGE: English

AB This study of the main components of drilling muds is undertaken to present evidence that drilling muds present little threat to the environment. Materials used in drilling fluids in the greatest quantities are those added to increase density, such as lead, galena, ferrosilicon, hematite, barite, strontianite, and amorphous silica. The viscosity of a drilling fluid is reduced by decreasing plastic viscosity, yield point, rate and/or degree of gelation, or combination effects, using complex phosphates, plant tannins, lignitic materials and humates, and lignosulfonates. Viscosity is increased with materials such as bentonite, attapulgite, organophilic clays, or sodium polyacrylates. Formation sealing materials in the mud include granular, fibrous, and flaky fragments such as walnut shells, cottonseed hulls, mica, and cellophane flakes. Materials to counteract contaminants may include lignitic material, sodium compounds, and caustics. Oil muds contain different materials for enhancement and stabilization. Bactericides and lubricants are added to both types of mud.

☐ **TITLE: NEW OIL BASE MUD SYSTEM CUTS DRILLING COSTS**

L21 ANSWER 71 OF 73 TULSA COPYRIGHT 1999 UTULSA

ACCESSION NUMBER: 78:5231 TULSA

DOCUMENT NUMBER: 248163

AUTHOR: SMITH, B

SOURCE: WORLD OIL V 186, NO 4, PP 75-76, 85, MARCH 1978.

LANGUAGE: English

AB An oil mud formulation, incorporating an emulsifier a

SEARCH STRATEGY

FILE 'REGISTRY' ENTERED AT 14:03:59 ON 14 MAY 1999

L1 1 SEA 108-31-6  
L2 1 SEA 85-44-9

FILE 'CA' ENTERED AT 14:04:33 ON 14 MAY 1999

L3 59214 SEA L1 OR L2 OR PHTHALIC(W)ANHYDRIDE? OR MALEIC(W)ANHYDRIDE?  
L4 121 SEA EMULSIF? AND (OIL(W)BASE?(W)MUD? OR DRILL?(W)MUD?)  
L5 1 SEA L3 AND L4  
L6 42 SEA L4 AND ENG/LA  
L7 41 SEA L6 NOT L5  
L8 79 SEA L4 NOT L6  
L9 48 SEA L8 AND P/DT  
L10 10 SEA L9 AND (GB OR CA OR US OR ZA OR AU)/PC

FILE 'TULSA' ENTERED AT 14:11:02 ON 14 MAY 1999

L11 511 SEA EMULSIF? AND (OIL(W)BASE?(W)MUD? OR DRILL?(W)MUD? OR  
DRILL?(W)FLUID?)  
L12 1 SEA L11 AND L3  
SET DUPORDER FILE

FILE 'CA, TULSA' ENTERED AT 14:17:51 ON 14 MAY 1999

L13 1 DUP REM L5 L12 (1 DUPLICATE REMOVED)

FILE 'TULSA' ENTERED AT 14:18:01 ON 14 MAY 1999

L14 397 SEA L11 AND ENGLISH/LA  
L15 22 SEA L14 AND EMULSIF?/TI  
SET DUPORDER FILE

FILE 'CA, TULSA' ENTERED AT 14:18:43 ON 14 MAY 1999

L16 62 DUP REM L7 L15 (1 DUPLICATE REMOVED)

FILE 'TULSA' ENTERED AT 14:20:15 ON 14 MAY 1999

L17 284 SEA L14 AND (MUD? OR DRILL?)/TI  
L18 269 SEA L17 NOT L15  
L19 37 SEA L18 AND (OIL?(W)BASE?(W)MUD? OR DRILL?(W)MUD?)/TI  
L20 37 SEA L19 NOT L15  
SET DUPORDER FILE

FILE 'CA, TULSA' ENTERED AT 14:21:19 ON 14 MAY 1999

L21 73 DUP REM L7 L20 (5 DUPLICATES REMOVED)